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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MSC INTERNAL NOTE NO. 71-FM-219

SKYLAB 3 PRELIMINARY REFERENCE

EARTH RESOURCES

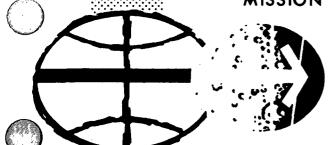
EXPERIMENT PACKAGE (EREP)

PASS PLANNING DOCUMENT

VOLUME II - EREP SITES AND S190

SWATH STUDY OF SELECTED REVS

Planetary Mission Analysis Branch
MISSION PLANNING AND ANALYSIS DIVISION



MANNED SPACECRAFT CENTER HOUSTON, TEXAS

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SKYLAB PROGRAM

SKYLAB 3 PRELIMINARY REFERENCE EARTH RESOURCES EXPERIMENT PACKAGE (EREP) PASS PLANNING DOCUMENT VOLUME II - EREP SITES AND \$190 SWATH STUDY OF SELECTED REVS

By Alfred N. Lunde
Planetary Mission Analysis Branch

June 8, 1971

MISSION PLANNING AND ANALYSIS DIVISION

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MANNED SPACECRAFT CENTER

HOUSTON, TEXAS

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SKYLAB 3 PRELIMINARY REFERENCE EARTH RESOURCES EXPERIMENT PACKAGE (EREP) PASS PLANNING DOCUMENT

VOLUME II - EREP SITES AND S190 SWATH STUDY OF SELECTED REVS

By Alfred N. Lunde

SUMMARY

The purpose of this document is to present groundtacks with S190 swaths of selected revs (revolutions) as they pass over areas containing EREP (Earth Resources Experiment Package) sites. This document is the second of three volumes needed to determine which revs to be used for EREP passes.

These data are based on an SL-1 launch at Greenwich mean time of $17^{h}30^{m}0.00^{s}$ on April 30, 1973.

A copy of the enclosed data was forwarded to the Science Mission Support Division on May 28, 1971, for further evaluation.

INTRODUCTION

This document presents detailed study of groundtracks and S190 swaths of revs that are of further interest in EREP site evaluation. By evaluating the SL-3 groundtracks (ref. 1) the revs to be further studied have been greatly reduced and are presented in this report. The evaluation of these data are conducted by the Science Mission Support Division as part of the EREP pass planning team (ref. 2).

Some EREP passes can be determined from the enclosed data, but in some cases a more detailed study is needed. Volume III will present a detailed graphical study of certain small areas of interest as well as digital data needed for the final evaluation of EREP passes.

Table I lists all EREP sites, their experiment number, and their location as of the freeze date of April 15, 1971 (ref. 3). These sites will not change for the duration of the SL-2, SL-3, and SL-4 study. These studies will take approximately 2 months.

The eight EREP disciplines are combined into three sets of disciplines. Reference 4 shows the disciplines individually.

All rev numbers appearing in this report are referenced to the SL-1 launch. The SL-3 will be launched 1278 revs after the SL-1 launch, and deorbit occurs on rev 2090 (ref. 5).

EREP SITES

All currently defined EREP sites are shown in this report. The eight EREP disciplines have been combined into three groups of EREP disciplines. Some of the EREP sites appear in more than one group depending on their experiment purpose.

The eight EREP disciplines are as follows:

- a. E sensor performance evaluation
- b. F forestry
- c. G geology
- d. H hydrology
- e. L land use mapping
- f. 0 oceanography
- g. P pollution
- h. W atmospheric science (weather)

These eight disciplines are combined into three discipline groups as follows:

- a. F and E
- b. G, H, and O
- c. L, P, and W

Figures 1, 2, and 3 show the location of these sites on world and U.S. maps. Figure 4 shows all the EREP sites that appear in two congested areas - Houston and New York-Baltimore. The standard numbering system to identify EREP sites has been used on these plots. To identify the sites, the reader should refer to table I.

Figure 5 shows the S190 through S194 sensor fields of view.

DISCUSSION OF DATA

Immediately following figure 5 are all data needed to further evaluate the SL-3 revs for EREP passes. Since these plots are computer generated and numerous, they have not been given a figure number.

The groundtracks and S190 swaths are shown on maps containing EREP sites. The data on the plots can readily be identified by the information contained above each plot. The rev number(s) and discipline group are printed as part of this information. The rev always starts at 80° west longitude.

Most of this data consists of passes over the continental United States. However, a few groundtracks and S190 swaths are shown over other parts of the world. The S190 is the only sensor swath shown in this report. The S190 is a 6-channel high precision 70mm camera facility. The lenses will have a focal length of 6 inches, providing an approximate 88- by 88-n. mi. square surface coverage from a 235-n. mi. orbit.

The reader can readily identify data shown on all of these plots by looking at the longitude-latitude band. Then, by looking at figures 1 through 3, depending on the EREP group required, and by consulting table I, each EREP site can be identified.

CONCLUSIONS

The enclosed data are second of three parts in a series needed to determine the SL-3 revs to be used for EREP passes. By evaluating the enclosed data, the revs to be considered will be further reduced.

TABLE I.- PRELIMINARY EARTH RESOURCES EXPERIMENT

PACKAGE TEST SITES AS OF MAY 1971

Test site	Test site name	Coordinates	Experiment no.	Test site	Test site name	Coordinates	Experiment no.
011	Chesapeake Bay MDTS	3920N - 7750W 3940N - 7600W 3630N - 7430W	E - 4 0 - 1	052	Imperial Valley, California	3310N - 11550W 3230N - 11515W	E - 4 E - 6 E - 7
012	Greater Washington	3600N - 7620W 3910N - 7720W 3838N - 7645W	E - 4	053	Oregon Coast	4622N - 12530W 4622N - 12430W 4600N - 12430W	0-1
013	Greater Baltimore	3936N - 7645W 3900N - 7620W	E - 4			4600N - 12345W 4220N - 12345W 4220N - 12530W	
014	Upper Chesapeake Bay	3900N - 7645W 3900N - 7620W 3936N - 7620W	E - 4	054	Atlanta	3357N - 8532W 3253N - 8404W	E-4 F-1
		3936N - 7600W 3800N - 7645W		055	Gulf Coast	2750N - 9755W 3010N - 9430W	0 - 1
022	Phoenix	3342N - 11250W 3312N - 11130W	E - 4 E - 6			2935N - 9400W 2730N - 9715W 2615N - 9710W	
023	Wilcox Playa	3214N - 11000W 3203N - 10943W	G - 1	056	Mississippi Delta	2615N - 9750W 2930N - 9030W	0 - 1
024	Copper Area, Arizona	3145N - 11050W 15 n. mi. radius	G - 1			2830N - 8930W	E - 4 E - 6
031	Houston MDTS	3100N - 9700W 3140N - 9450W	E-6 .	059	Wind River, Washington (Site 1/4 mile square)	4543N - 12154W 5 n. mi. radius	F-1
		2900N - 9405W 2800N - 9610W	L-1	060	Wesiaco, Texas	2609N - 9757W 10 n. mi. radius	E - 7
032	Greater Houston	3000N - 9537W 2933N - 9506W	P - 2 E - 4	061	Bonanza, Colorado	3835N - 10645W 3845N - 10615W	E - 7 G - 1
033	Galveston Bay	2945N - 9500W 2920N - 9440W	E - 4 L - 3 P - 2			3810N - 10540W 3750N - 10615W	_
034	Houston Ship Channel	2946N - 9518W 2938N - 9455W	E - 4	062	White Sands, N.M. Lava Beds	3355N - 10700W 3315N - 10550W	E - 6 E - 7
035	Houston Intercontinental	3000N - 9521W 2957N - 9518W	E-6	063	White Sands, N.M. Desert	3305N - 10630W 3240N - 10610W	E - 6 E - 7 L - 3
036	Jones State Forest	3030N - 9545W 2945N - 9500W	F-1	064	Lava Beds, California	4140N - 12130W	G-1 G-1
037	Sam Houston State Park	3043N - 9550W 3020N - 9500W	E-6	065	San Antonio-Uvalde, Texas	15 n. mi. radius 2900N - 9700W 3100N - 10000W	E-6 L-1
038	Big Thicket, Texas	3130N - 9530W 3020N - 9400W	E-6	066	Buccaneer Tower	2850N - 9449W 2 n. mi, radius	L-3
041	Southern Florida MDTS	2900N - 8300W 2900N - 8000W 2400N - 7930W 2400N - 8220W	L-1	067	Great Barrier Reef, Aust.	9205 - 14340E 9205 - 14420E 13305 - 11420E	0 - 1 0 - 3
042	Everglades, Florida	2544N - 8126W 2510N - 8023W	E - 7 0 - 3			1440S - 14550E 1600S - 14550E 1450S - 14525E	
051	Salton Sea, California	3340N - 11620W 3340N - 11545W 3310N - 11515W 3310N - 11550W	E - 6 E - 7	068	Lake Michigan	1330S - 14340E 4600N - 8800W 4130N - 8500W	E - 6

TABLE I.- PRELIMINARY EARTH RESOURCES EXPERIMENT
PACKAGE TEST SITES AS OF MAY 1971 - Continued

Test site	Test site name	Coordinates	Experiment no.	Test site no.	Test site name	Coordinates	Experiment no.
069	Lake Superior	4806N - 8706W 4718N - 8618W	E - 7 0 - 5	088	Los Angeles, California	3420N - 11900W 3330N - 11800W	P - 2 E - 4
070	Great Salt Lake, Utah	4130N - 11300W 4000N - 11400W	L - 3 E - 2 E - 6	089	Lake Erie	4200N - 8300W 4200N - 8200W 4130N - 8200W 4230N - 8300W	P - 2 E - 4 E - 6
071	Crater Lake, Oregon	4259N - 12210W 4254N - 12202W	E - 6	090	Gulf Stream (Eastern U.S. Coast)	4200N - 7000W 4000N - 6300W	0 - 1 E - 6
072	Painted Desert	3510N - 11000W 3438N - 10940W	E - 6	: 1	2.0, 23.3.0	2400N - 7600W 2800N - 8200W	
073	North Dakota-Montana Area	5000N - 10500W 4000N - 9800W	L - 4	091	Kuroshio Current, Japan	2405N - 12700E 3500N - 14200E	0 - 1
074	Australia to North Cape	2700S - 12000E 2200S - 11200E	L-4			3200N - 14200E 1700N - 12700E	
075	Argentina Pampas	3800S - 6300W 3000S - 5700W	L-4	092	Bahamas	2600N - 8000W 2800N - 7800W 2200N - 7000W	0 - 1
076	Padre Island, Texas	2700N - 9735W 2800N - 9700W 2700N - 9710W 2600N - 9710W	E - 6 E - 7	093	Columbia River	2000N - 7000W 4620N - 12410W 4605N - 12330W	0 - 1
077	N. Carolina Not. Seashore	3520N - 7550W 3410N - 7500W	E - 7	094	California Coast	4200N - 12700W 4200N - 12300W 3300N - 11600W	0 - 1
078	North Atlantic	5000N - 4000W 4000N - 2000W	0 - 2			3200N - 12200W	
079	Lake Livingston, Texas	3057N - 9456W 3037N - 9334W	E - 7	095	Bermuda	3230N - 6500W 3210N - 6430W	0 - 1
080	Nile Delta	3230N - 3230E 3000N - 3000E	E - 7	096	Southwest U.S.	4000N - 1300W 3000N - 1100W	L - 2
081	Okeefenokee Swamp, Georgia	rgia 3130N - 8252W 3052N - 8106W	0 - 3	097	Midwest U.S.	4500N - 11000W 3000N - 9000W	L - 2 E - 7
	ļ	2957N - 8220W 3051N - 8314W		098	North Central U.S.	5000N - 10000W 4000N - 8000W	L-2
082	Boston	4234N - 7130W 4210N - 7050W	E - 4	099	Buffalo Area	4300N - 7900W 4200N - 7700W	L - 2
083	Saragosso Sea	3700N - 7600W 2200N - 4000W	0 - 3	100	Texas - Gulf Area	3500N - 10000W 2500N - 9000W	L - 2
084	Tahiti (Lagoons and Atolls)	1800S - 15000W 1720S - 14900W	0 - 1 0 - 3	101	Inter Texas - Gulf Area	3500N - 9800W 2500N - 9200W	L - 2
085	Hawaii	2215N - 16030W 2215N - 15900W	0 - 3	102	Panhandle Area	4000N - 10400W 3500N - 9600W	L - 2
	:	2000N - 15400W 1840N - 15500W		103	Inter North Central U.S.	5000N - 9500W 4000N - 9000W	L - 2
086	Japanese Coast	4500N - 14200E 4200N - 14900E 2800N - 13300E 3300N - 12700E	0 - 3	104	Upper Mississippi River Area	4500N - 9400W 4000N - 9000W	L - 2
087	Peru Coast	800S - 7914W 800S - 7840W 1050S - 7715W 1050S - 7800W	0 - 3				

TABLE I.- PRELIMINARY EARTH RESOURCES EXPERIMENT

PACKAGE TEST SITE AS OF MAY 1971 - Continued

Test site	Test site name	Coordinates	Experiment no.	Test site no.	Test site name	Coordinates	Experiment no.
107	Atlantic	4400N - 4100W 4500N - 1600W 3500N - 4800W 3800N - 7100W	0 - 4	125	Indonesia October - March	500S - 16000E 2000S - 12000E 1000N - 9000E 200N - 13500E	W - 1
108	Central Gulf of Mexico	2900N - 9600W 2500N - 8500W	E - 2 0 - 2 L - 2 L - 3	126	Air Sea Interface - Net Flux of water	2500N - 7500W 2500N - 2800W 0 - 700W 0 - 5500W	W - 2
109	Midwestern Atlantic	4000N - 7000W 2000N - 5000W	L - 2 0 - 2	127	Combelt	4000N - 8600W 4200N - 9000W	L - 1
110	Central U.S.	5000N - 10000W 3500N - 9000W	L - 2 H - 1	128	Black Hills, S.D.	4430N - 10400W 4345N - 10330W	F-1
111	Baja Land/Sea Interface	3100N - 11800W 3100N - 11200W	E - 5	129	North Island, New Zealand	4130S - 17700E 3730S - 17400E	L - 4
		2400N - 10600W 2400N - 11300W		130	Central Madagascar	2500S - 4800E 1500S - 4300E	L - 4
112	Florida-Land/Sea Interface	2930N - 8400W 2930N - 8000W 2530N - 7900W	E - 5	131	Western U.S.	4500N - 11000W 3700N - 10500W	L-4
113	Victoria Desert, Australia	2530N - 8300W 2700S - 13500E	L-4	132	Andes Mnts.	1200S - 7900W 0 - 7500W	L-4
114	Michigan-Copper Country	20005 - 12300E 4600N - 8800W	G - 1	133	Newfoundland	5000N - 5900W 4600N - 5300W	L - 4
115	Southern Arizona	50 n. mi. radius 3100N - 11000W	L-1	134	West U.S. and Mexico	4300N - 11800W 3000N - 11000W	L-4
116	Colorado Molybenum	3400N - 11300W 3414N - 10618W	G-1	135	N. Hardwood Biome	4800N - 7630W 4200N - 6830W	L - 4
117	Mines	20 n. mi. radius	_	136	Bucks Lake, California	4050N - 12137W 3937N - 12003W	F - 1
117	Australia Canada	4000S - 15400E 1000S - 11200E .5000N - 13000W 4900N - 5500W	E - 7	137	Palaloapan, Mexico	1910N - 9610W 1830N - 9730W 1730N - 9640W	F - 1
119	Beta Network April - June	3542N - 9811W 3500N - 9723W	W-1	138	Copper Area, Utah	1845N - 9510W 4033N - 11209W 15 n. mi, radius	G - 1
120	Central U.S. April - June	4000N - 10400W 3400N - 9600W	W-1	141	Tri-State Lead and Zinc Okla., Mo., Kan.	3615N - 9600W	G - 1
121	Indonesia April - September	1500N - 1050E 900S - 1100E 0 - 9100E	W - 1	142	Lake of the Woods, Ont. (Canada to St. Louis)	4920N - 9450W 3839N - 9015W	H - 2
122	Africa April – September	1000N - 3000E 1000S - 2000E	W-1	143	Southern Sasketchewan (Canada to W. Kansas)	5000N - 10200W 3700N - 10000W	H - 2
123	South America October - March	700N - 700E 2000S - 6500W 500S - 4500W 200N - 8500W	W - 1	144	Southern Sasketchewan (Canada to Rapid City, S.D.)	5000N - 10500W 4400N - 10000W	H - 2
124	Africa October - March	3000S - 1000E 3000S - 5500E 700S - 5500E 0 - 1000E	W - 1				

TABLE I.- PRELIMINARY EARTH RESOURCES EXPERIMENT
PACKAGE TEST SITE AS OF MAY 1971 - Concluded

Test site	Test site name	Coordinates	Experiment no.	Test site no.	Test site name	Coordinates	Experiment no.
145	Great Falls, Montana to Houston, Texas	4730N - 10000W 4730N - 11115W	H - 2	193	Iron Ore Range, Minnesota	4717N - 9304W 15 n. mi. radius	E - 7 G - 1
		30N - 105W 30N - 95W		194	Western Big Bend	2900N - 10200W 3300N - 10700W	L-1
146	Pacific Ocean	5000N - 14500W 3000N - 14000W	0 - 2 0 - 4	195	Southern California	3200N - 11500W 3500N - 12000W	L-1
147	St. Lawrence Seaway	4500N - 6000W 5000N - 6500W	0 - 5	196	Wallops Island	3830N - 7300W 3630N - 7600W	E - 1
148	Lake Huron	4454N - 8236W 4430N - 8212W	0-5	197.	P. R. Trench (Puerto Rico)	1800N - 6800W 2100N - 6400W	E - 1
159	El Paso Area	3400N - 10800W 3100N - 10500W	€-2	198	N. Atlantic	3500N - 3500W 5000N - 2500W	E - 1
161	Gulf of California (Mouth of Colorado)	3220N - 11510W 3100N - 11400W	E - 4	199	Florida (Blake Escarpment)	2630N - 7800W 3300N - 7600W	E - 1
162	Meteor Crater, Arizona	3502N - 11102W 3501N - 11101W	E-6	200	Gulf of Mexico	2200N - 8500W 2900N - 9500W	E - 1
163	Edwards AFB, Dry Lake	3502N - 11755W 3438N - 11740W	E-6	201	Isthmus of Panama	600N - 7700W	E - 1
164	Illinois Sand Dunes	4140N - 8900W 4100N - 8700W	E-6	202	Atlantic (Gulf Stream)	3000N - 6000W 3800N - 7200W	E - 1
165	Bonneville Salt Flats	4040N - 11400W 4030N - 11340W	E-6	203	Great Lakes	4300N - 7900W 4830N - 8900W	E - 1
166	Roswell, Oil Fields	3400N - 10440W 3200N - 10200W	E - 6	204	Salt Flats	4100N - 11200W 4200N - 11300W	E - 1
167	China Lake, California	3547N - 11740W 3541N - 11735W	E-6	205	Marianas Trench	1030N - 14030 F 1600N - 14730 E	E - 1
168	Holloman AFB., New Mexico	3255N - 10610W 3245N - 10600W	E-6	206	Indian Low	200N - 7200E 800N - 7800E	E - 1
171	Hurricanes - Prime	4500N - 10000W 1200N - 4500W	W - 5	207	South of Baja	1500N - 11000W 2500N - 13000W	E - 1
172	Hurricanes - U.S. Sec.	3500N - 15000W 1500N - 11000W	W - 5	208	Japanese Trench	2700N - 14100E 3500N - 14400E	E - 1
173	Hurricane - N. Pacific June - October	4500N - 17000W 500N - 13000E	W - 5	209	Java Trench	1200S - 10300E 600S - 12000E	E - 1
174	Hurricane - N. Indian Ocean July - November	3000N - 8700E 500N - 6000E	W - 5	210	West Australia	1500S - 10500E 3000S - 11300E	E-1
175	Hurricane - S. Indian Oceans January - March	40005 - 8000E 5005 - 4000E	W - 5	211	East Australia	1500S - 15300E 3000S - 16500E	E - 1
178	Delaware Estuary	4013N - 7550W 3933N - 7530W	E-4	į			
179	Hudson River, New York	4120N - 7405W 4020N - 7200W	E-4			Į	
180	New York City	4100N - 7420W 4033N - 7300W	E - 4				
181	Kansas Wheat	3900N - 9800W 3800N - 9700W	E-6				

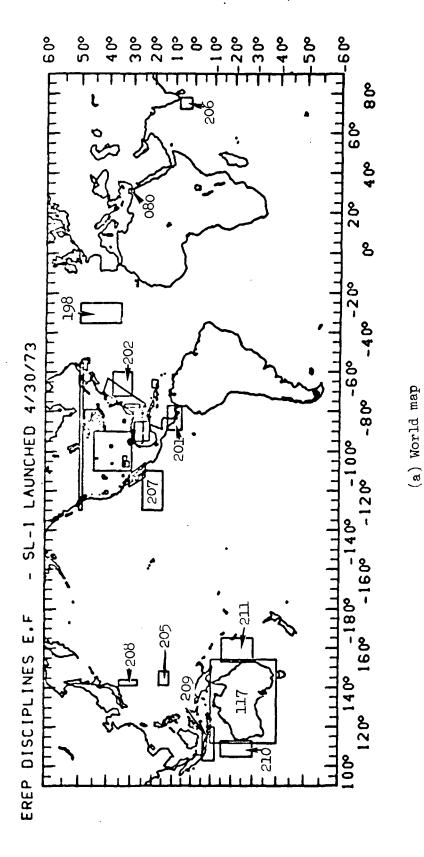
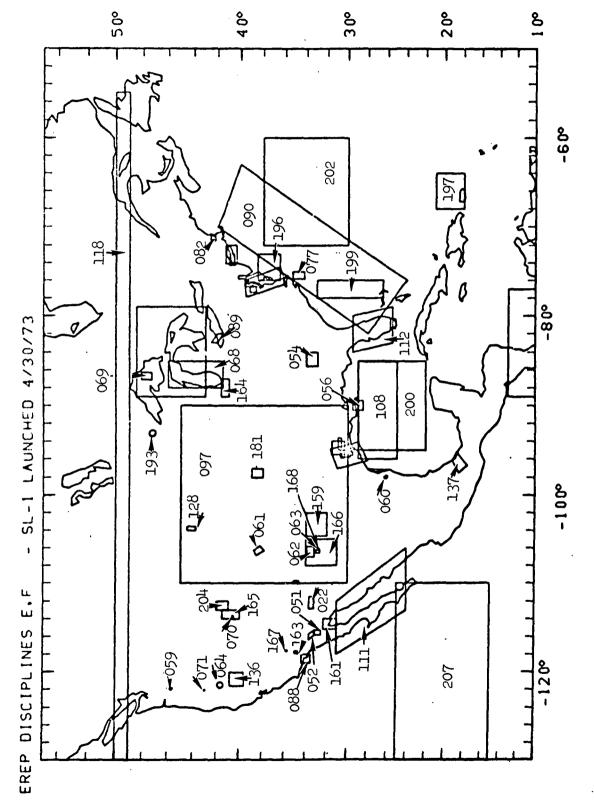


Figure 1.- EREP sites - disciplines E and F



(b) United States map

Figure 1.- Concluded

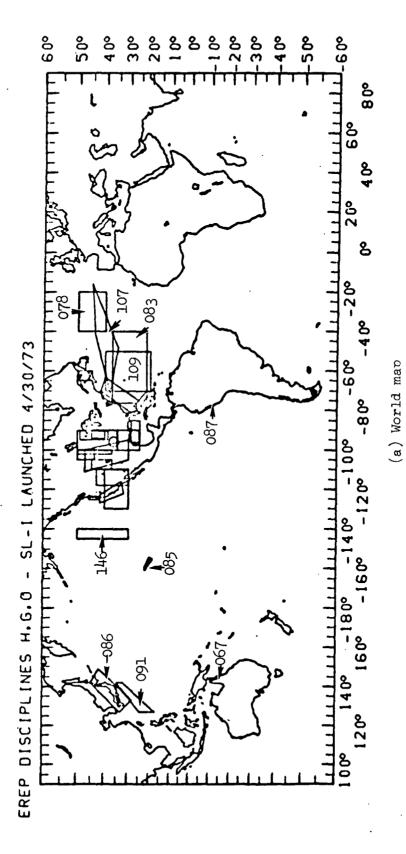
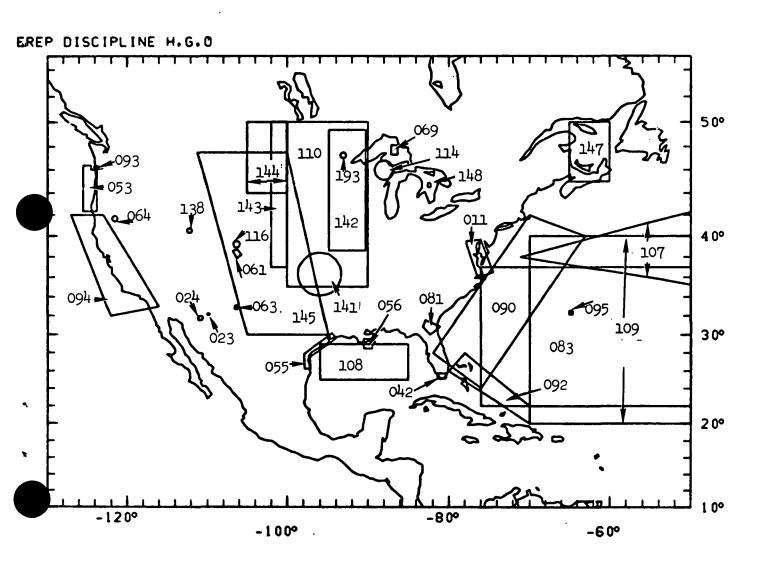


Figure 2.- EREP sites - disciplines H, G, and O



(b) United States map

Figure 2.- Concluded

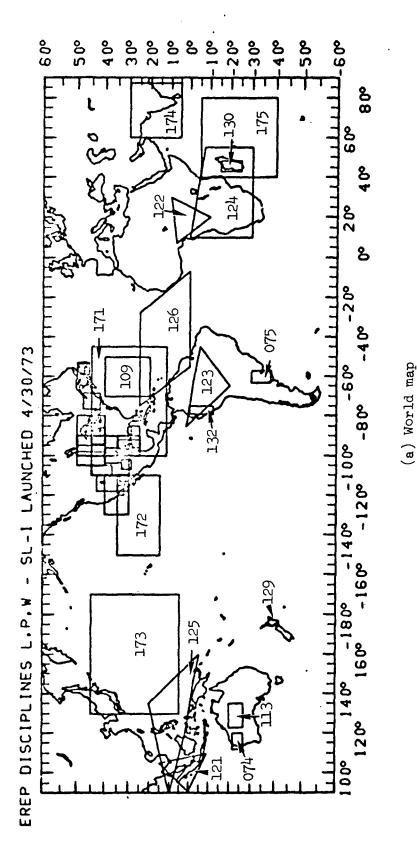


Figure 3. - EREP sites - disciplines L, P, and W

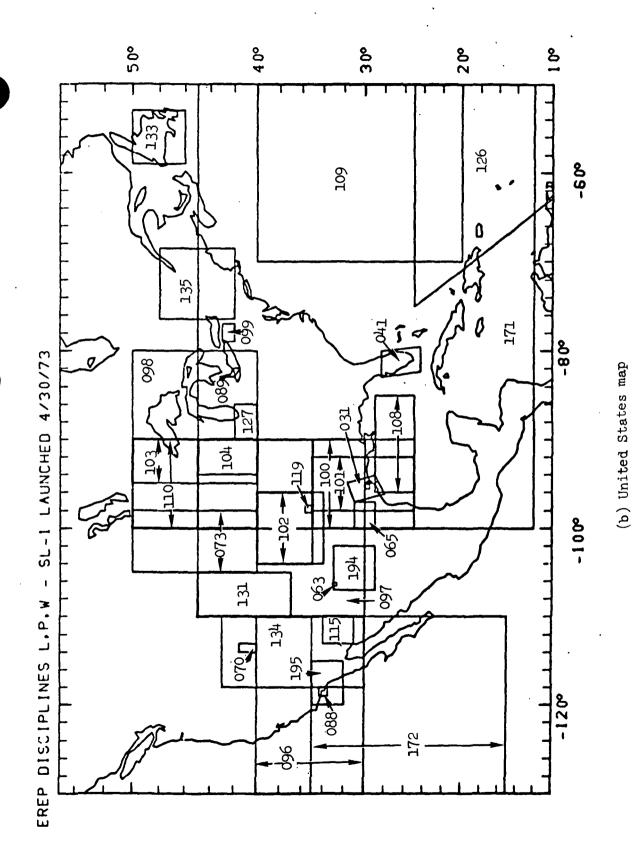
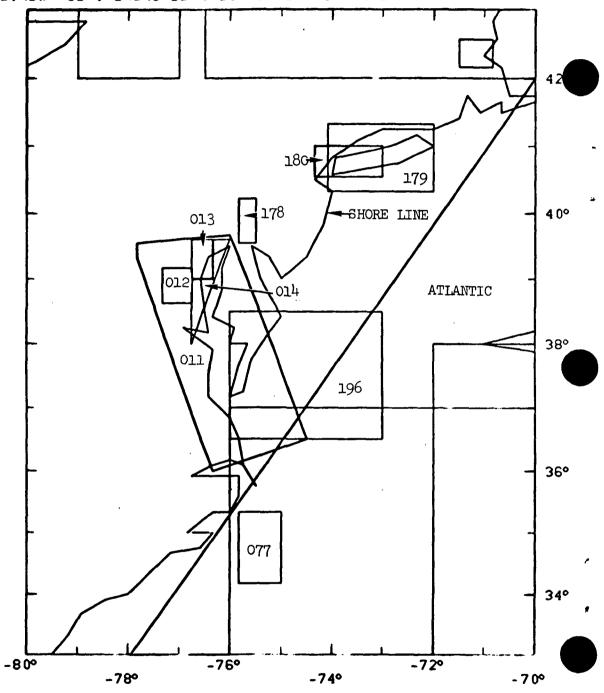


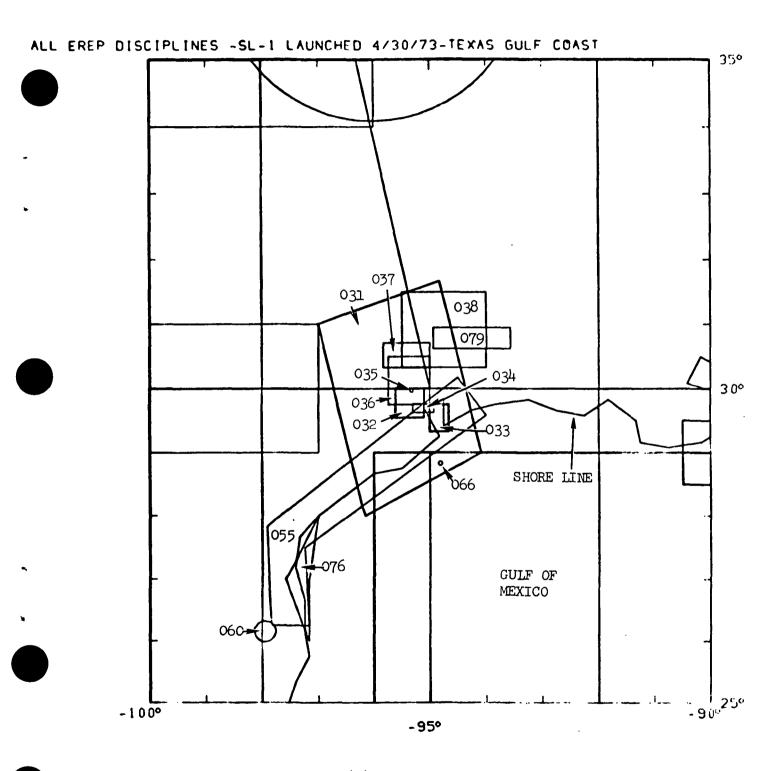
Figure 3.- Concluded





(a) New York-Baltimore area

Figure 4.- EREP sites - all disciplines



(b) Texas gulf coast area

Figure 4.- Concluded

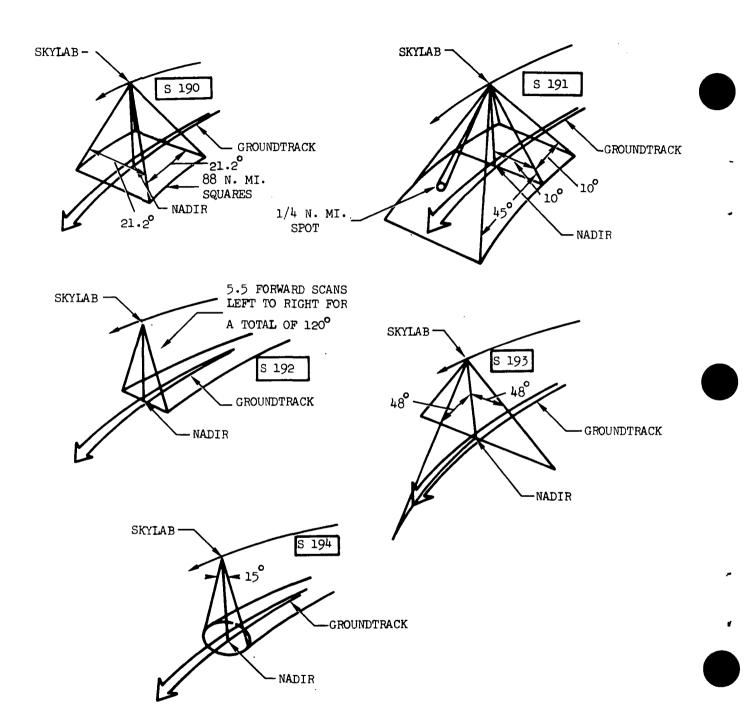
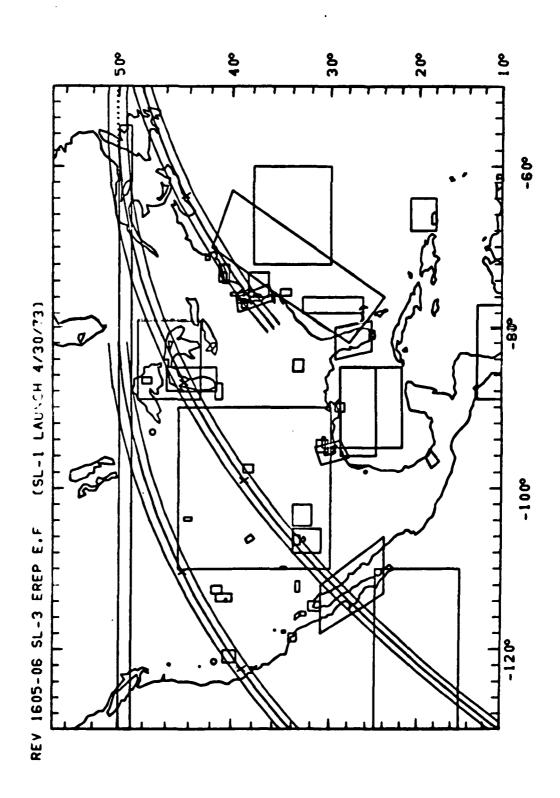
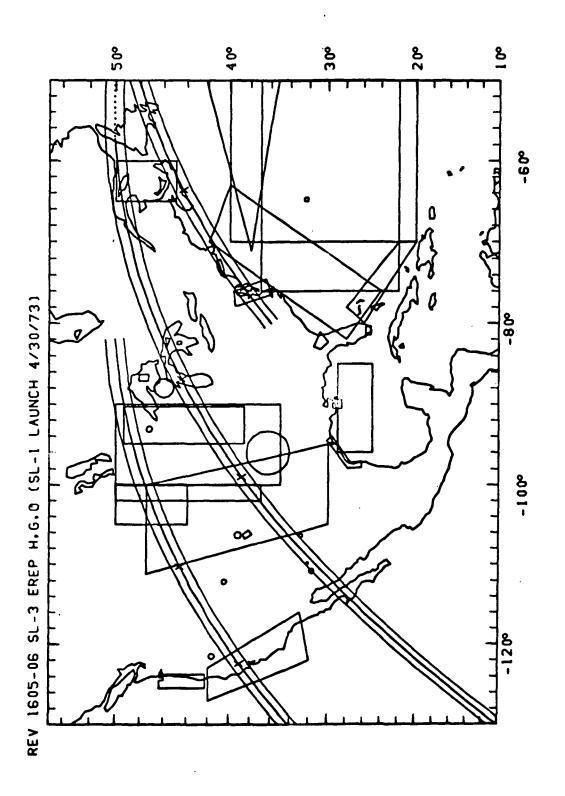
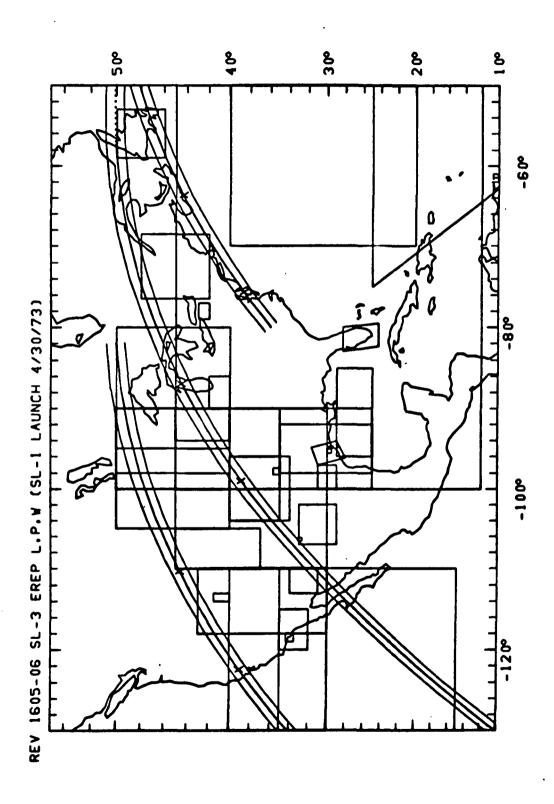
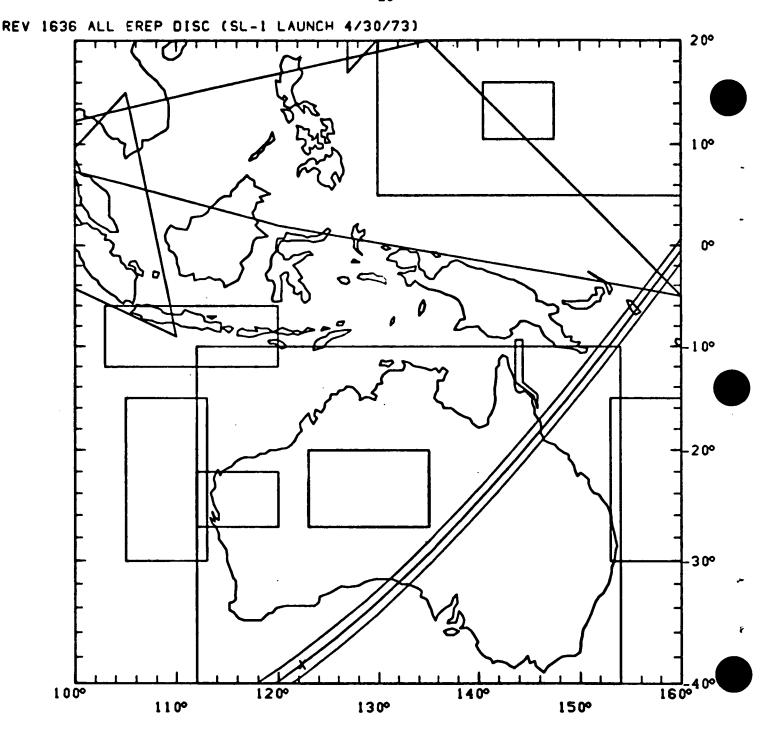


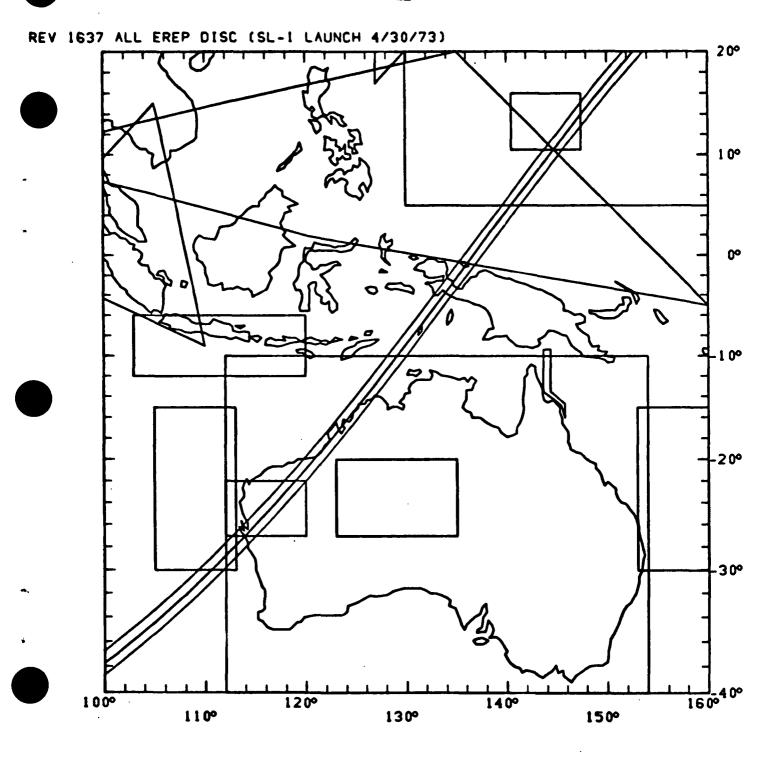
Figure 5.- EREP sensor field-of-view.

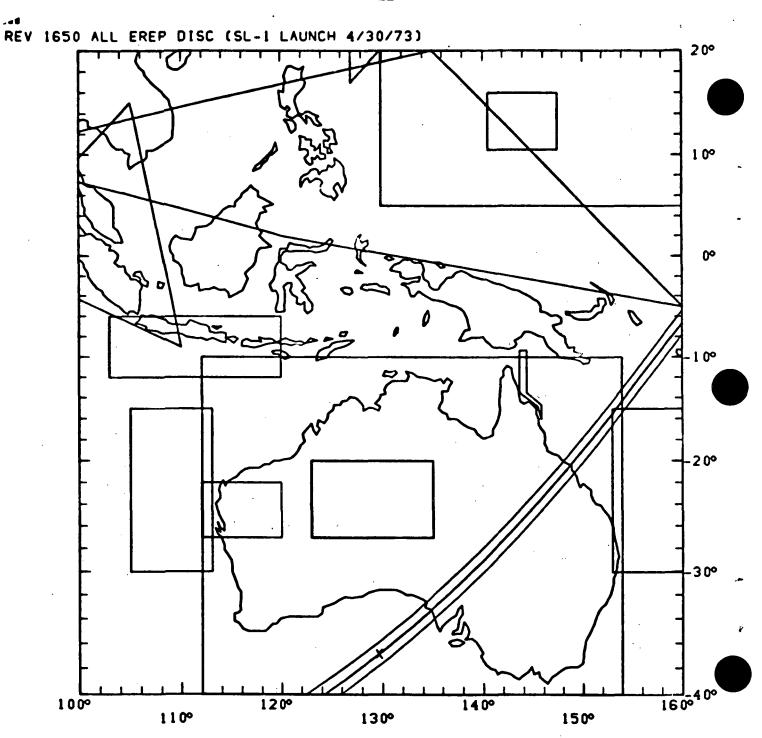


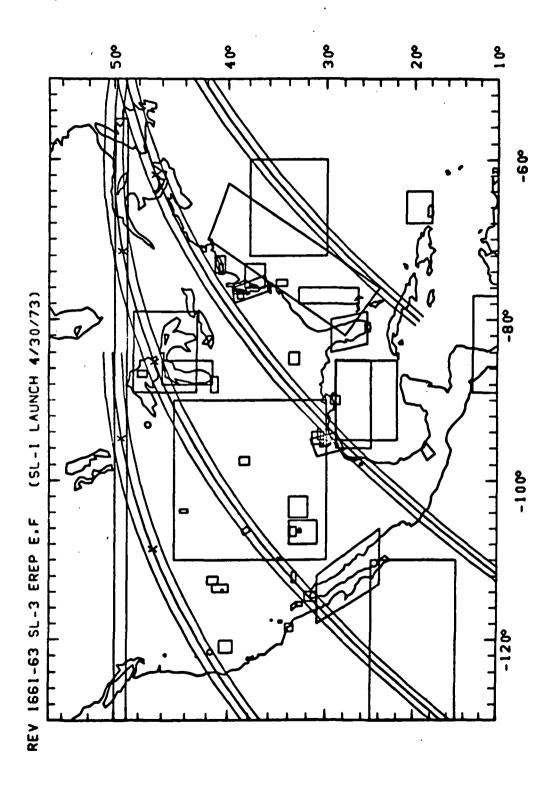


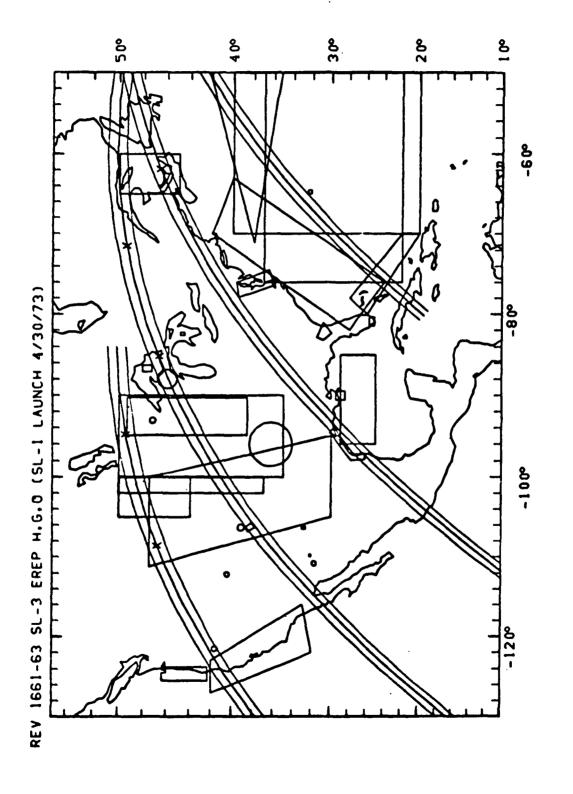


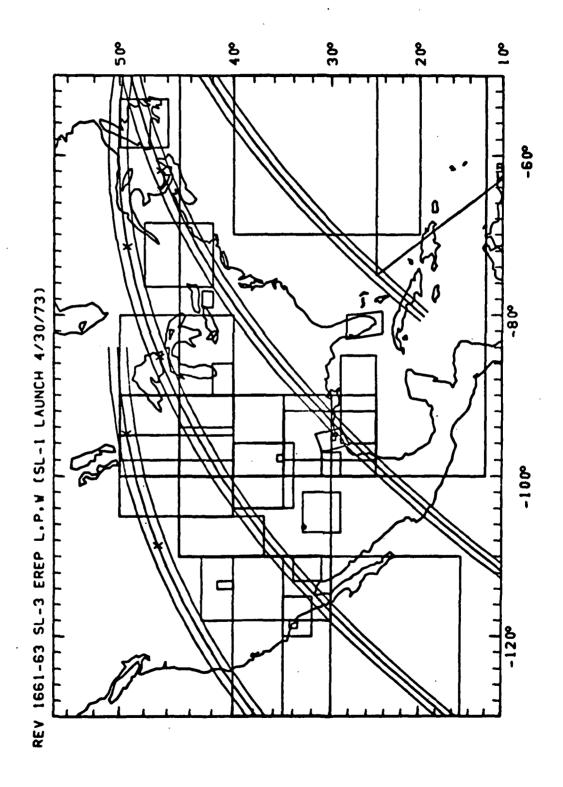


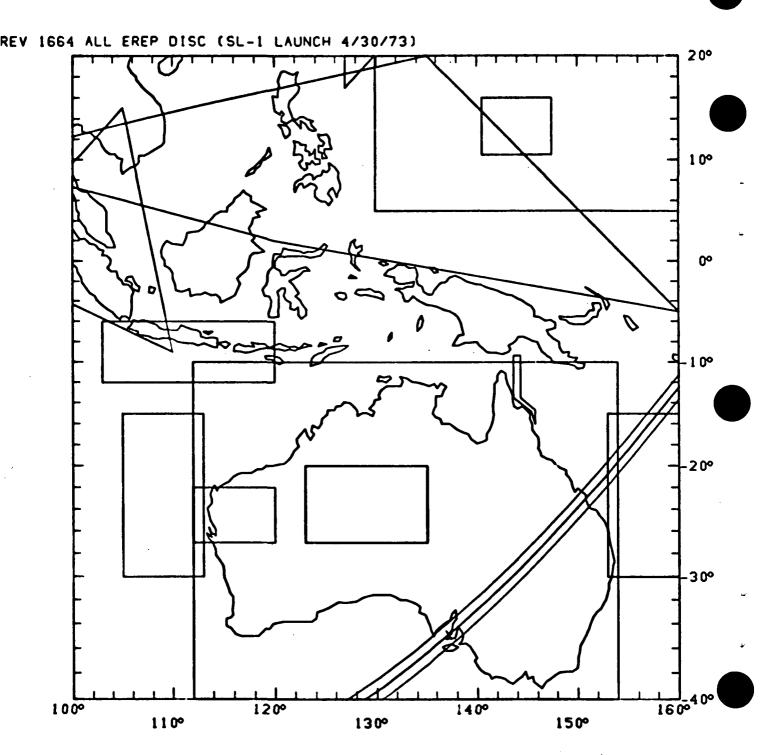


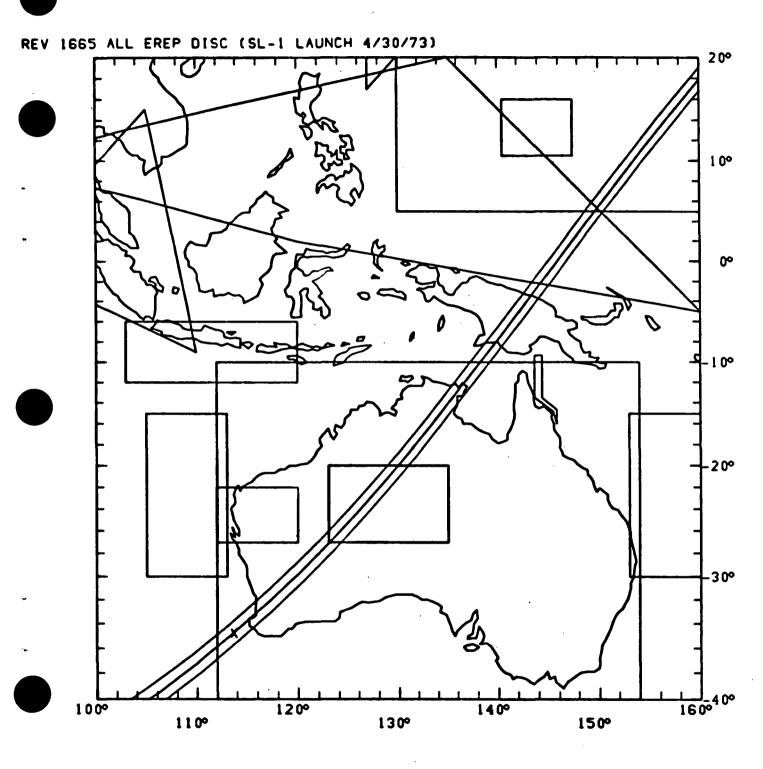


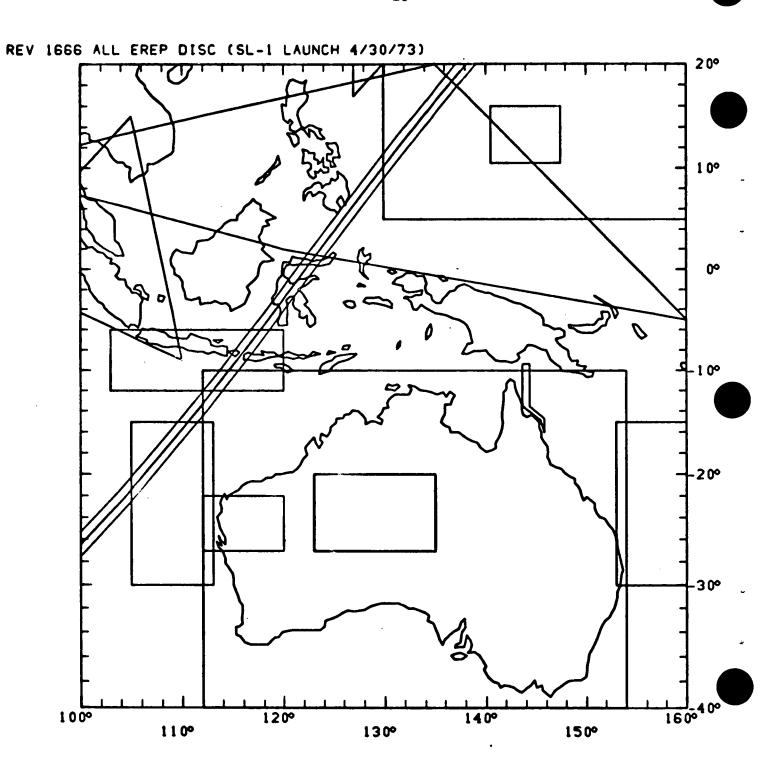


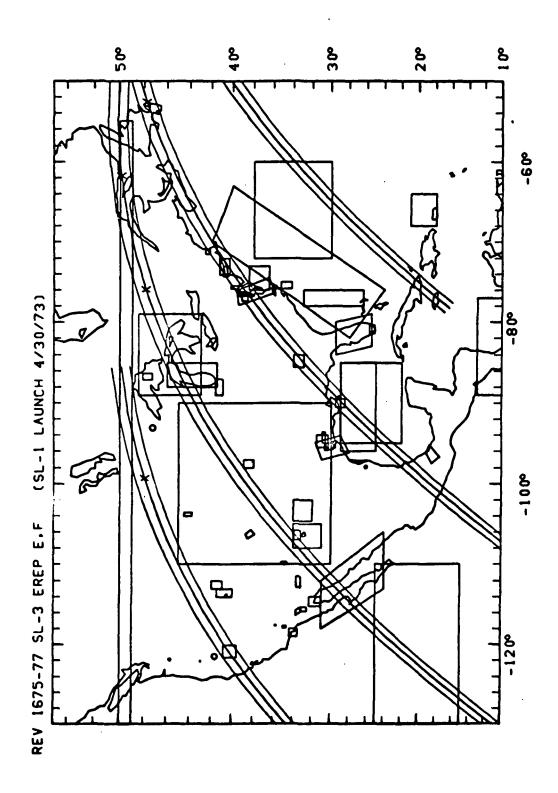


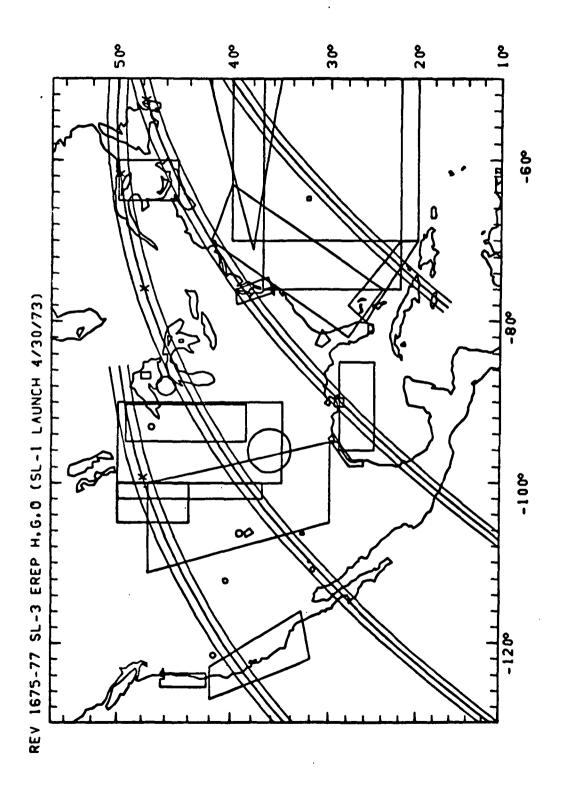


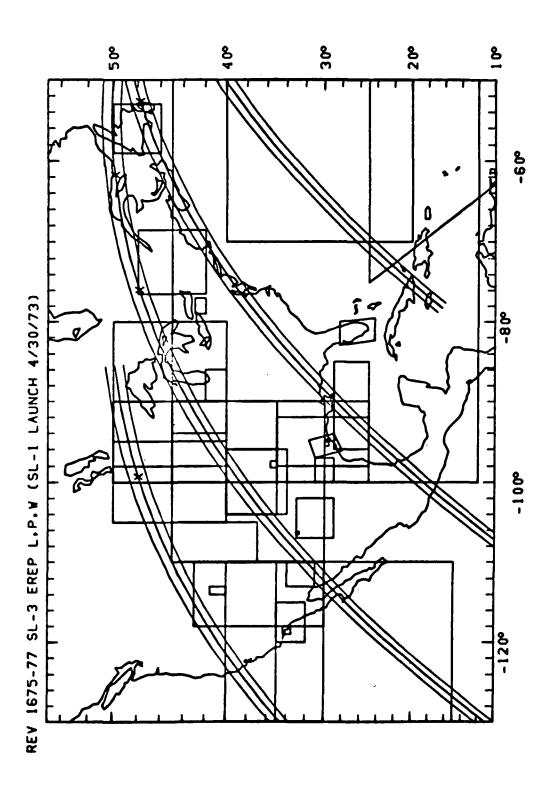


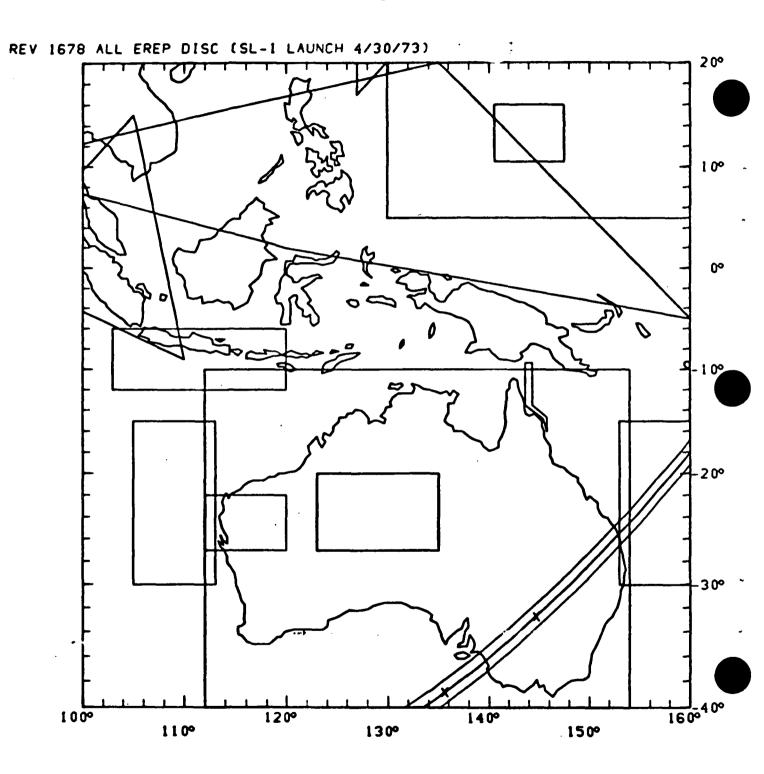


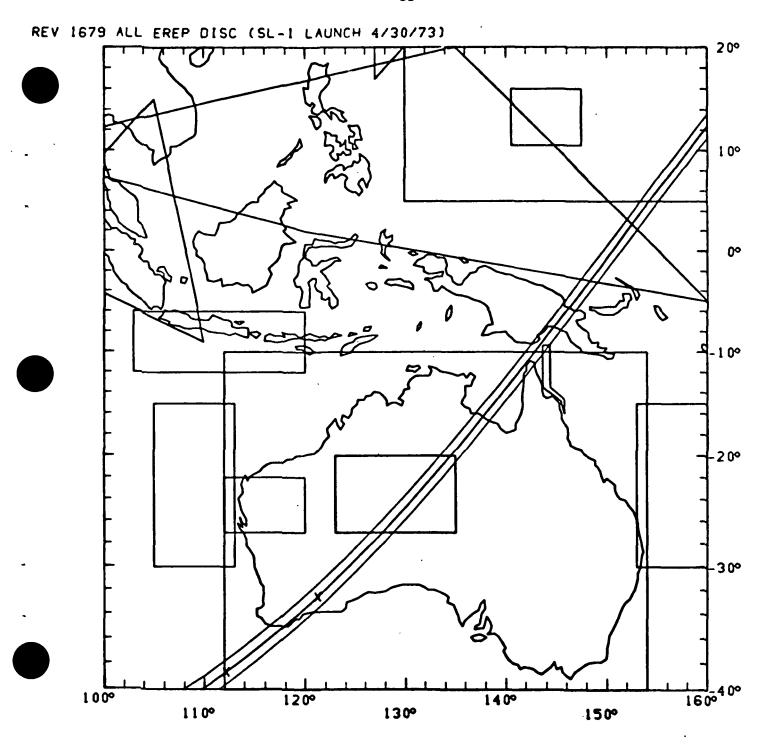


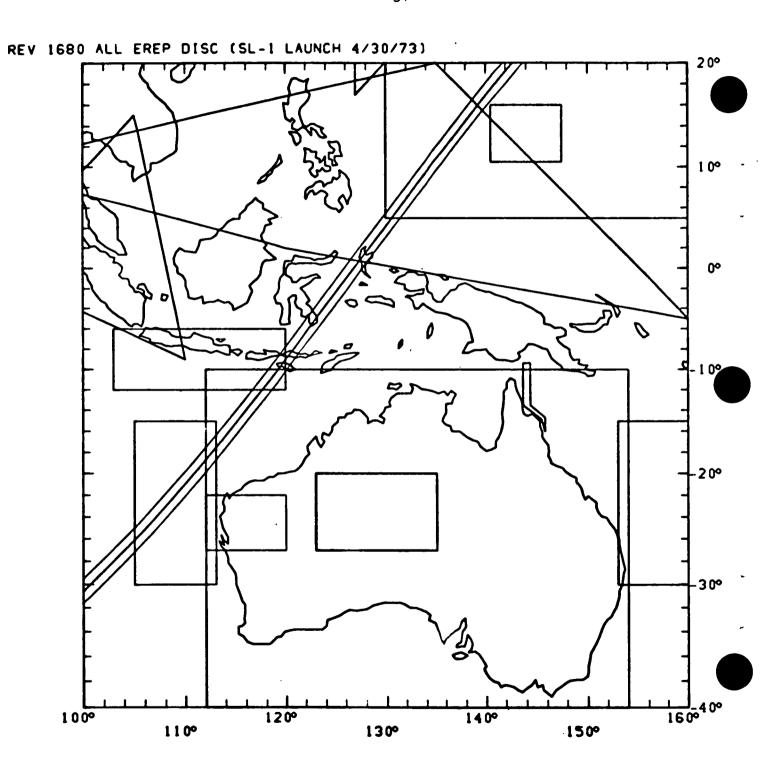


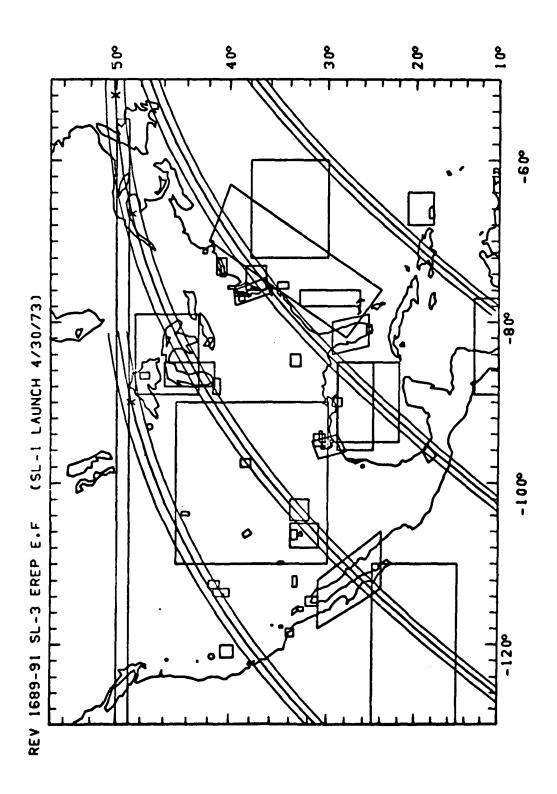


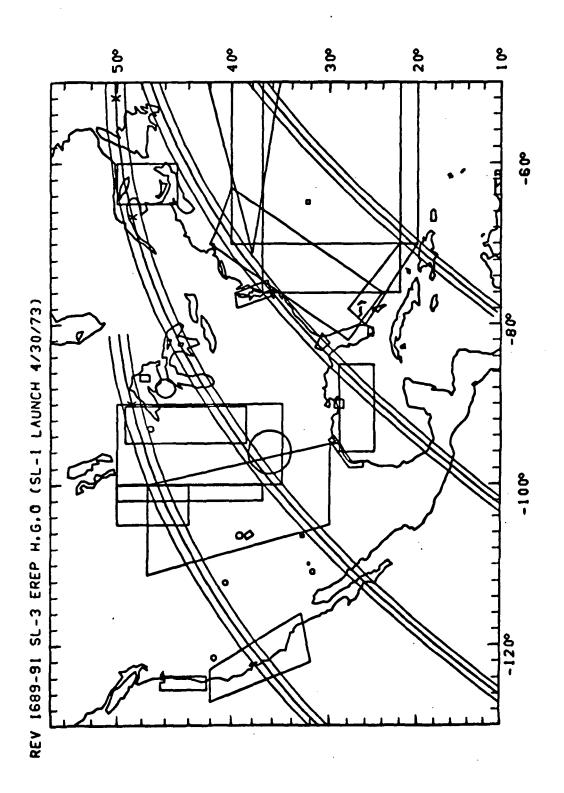


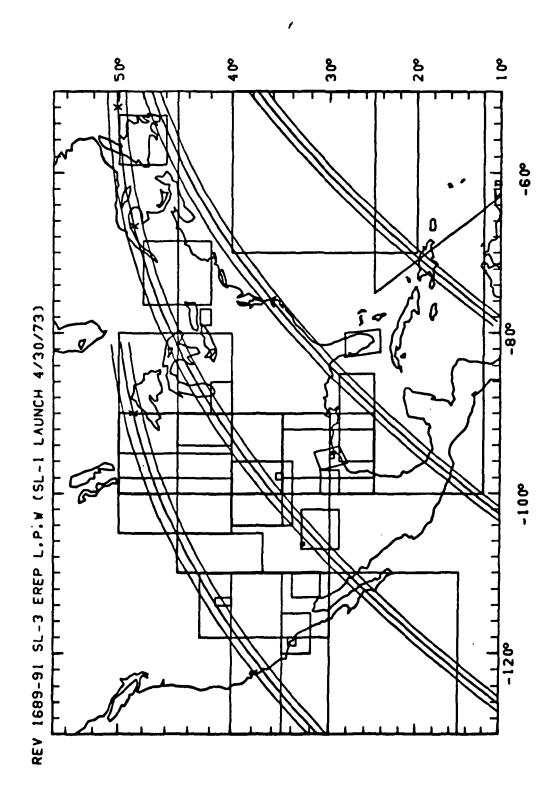






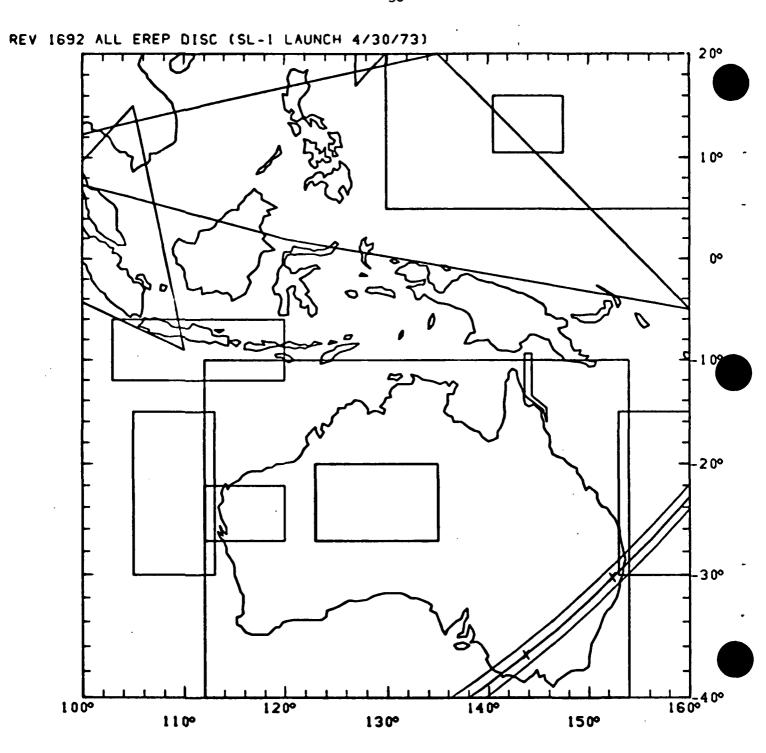


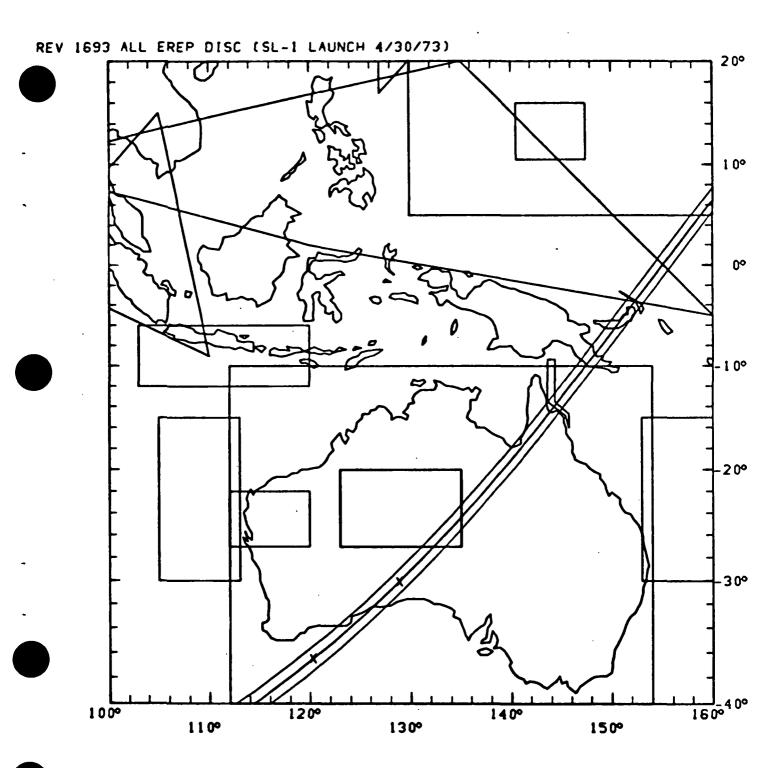


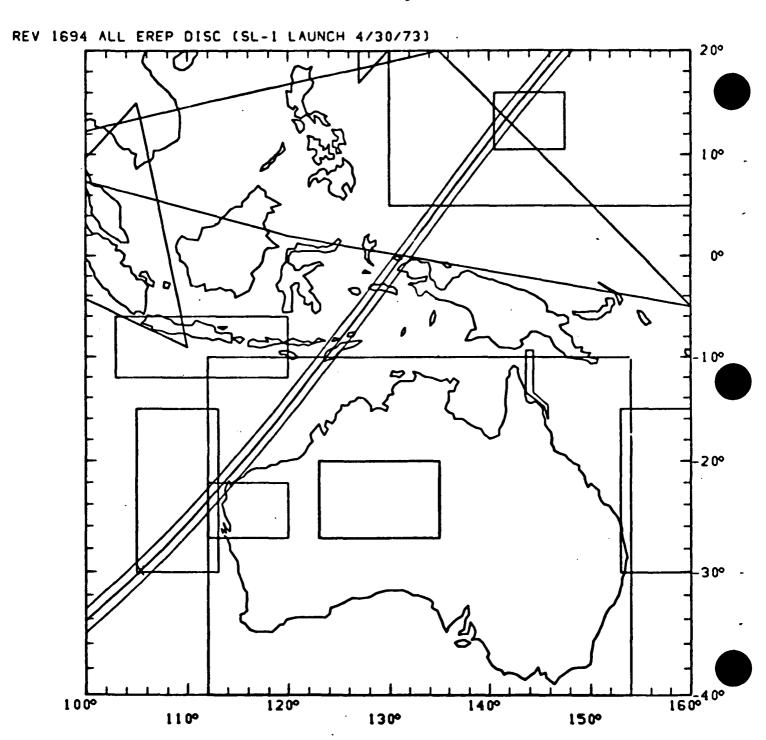


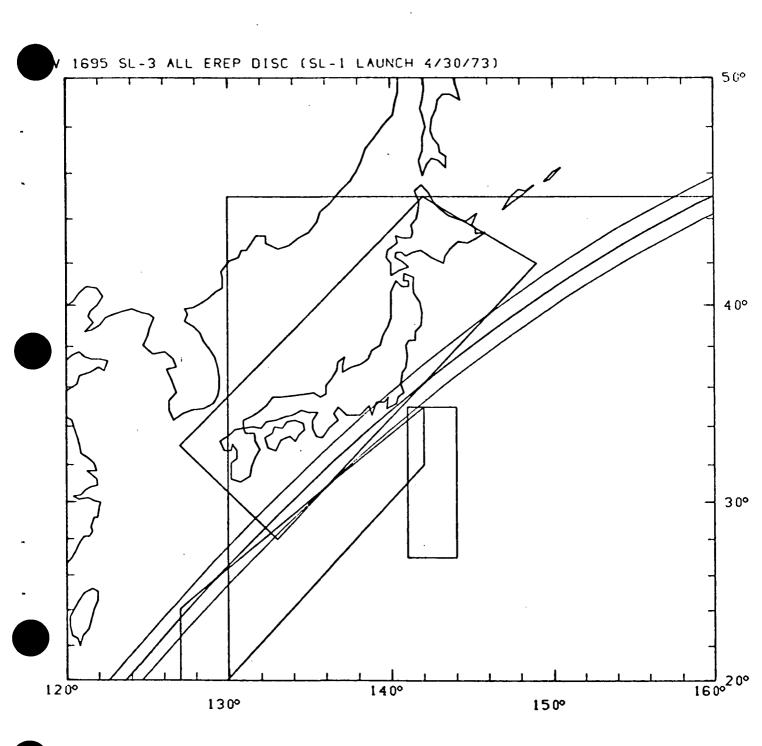
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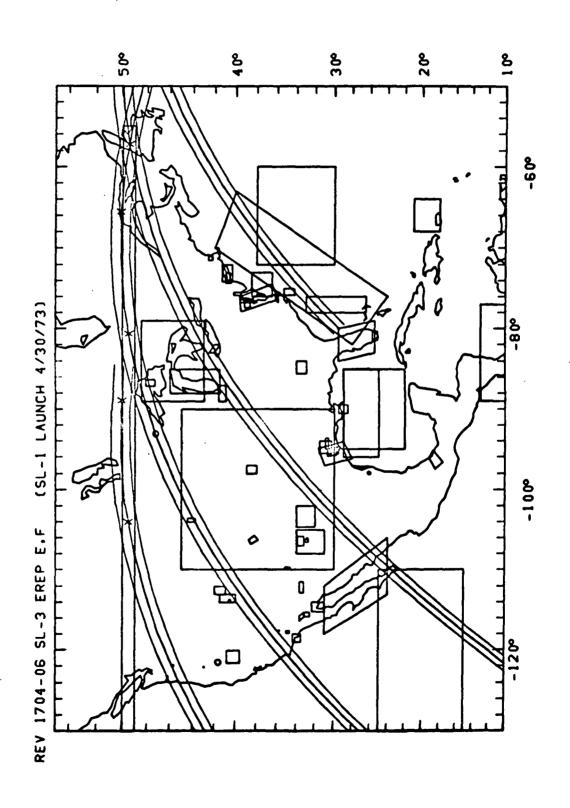
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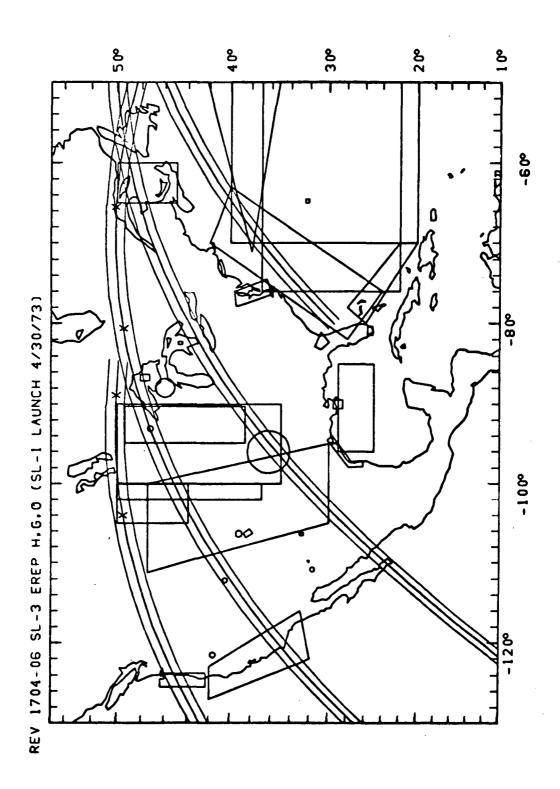


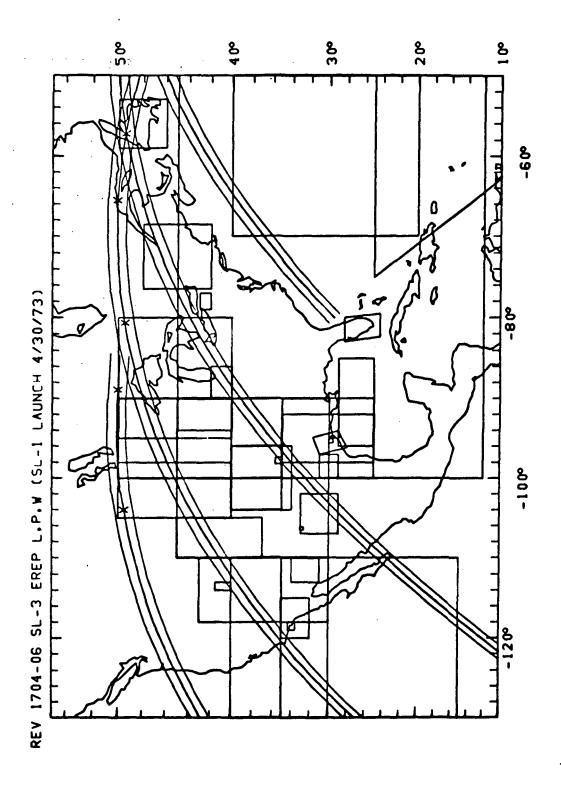


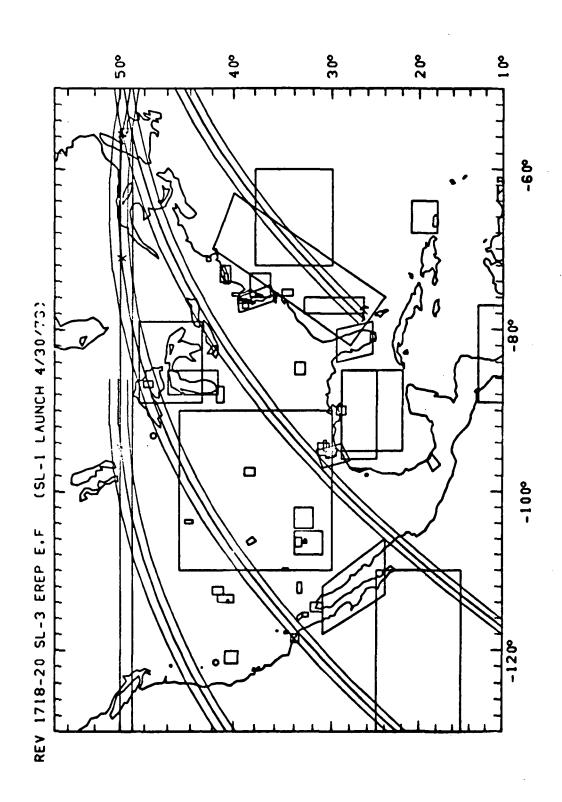


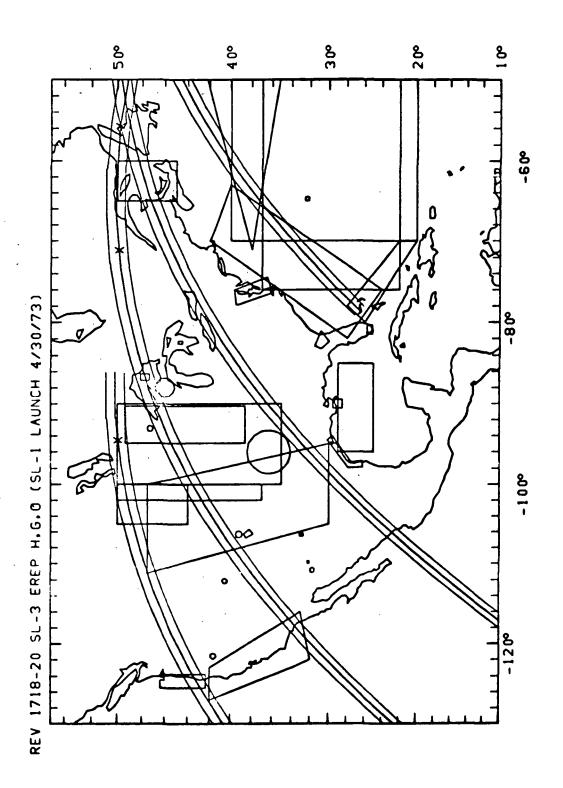


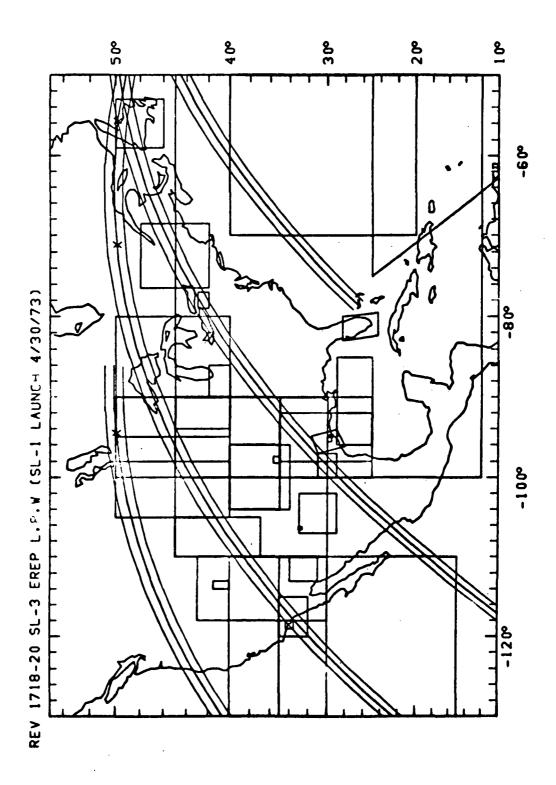


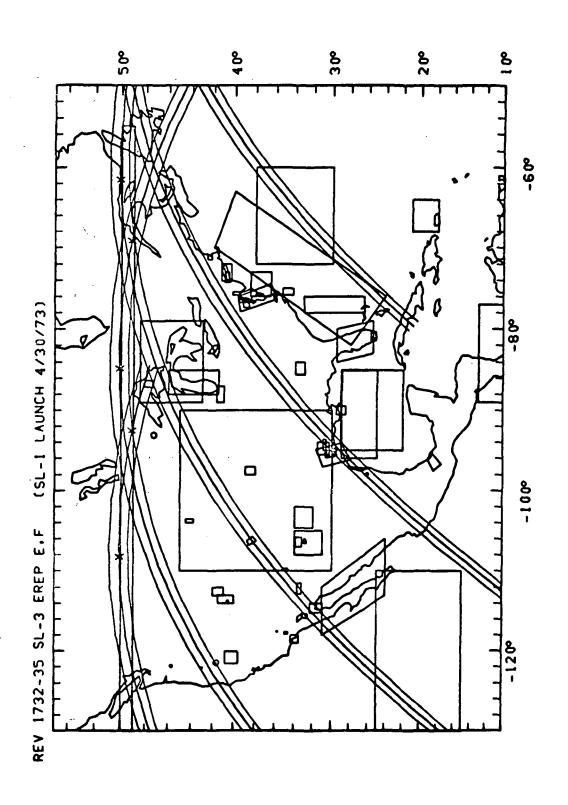


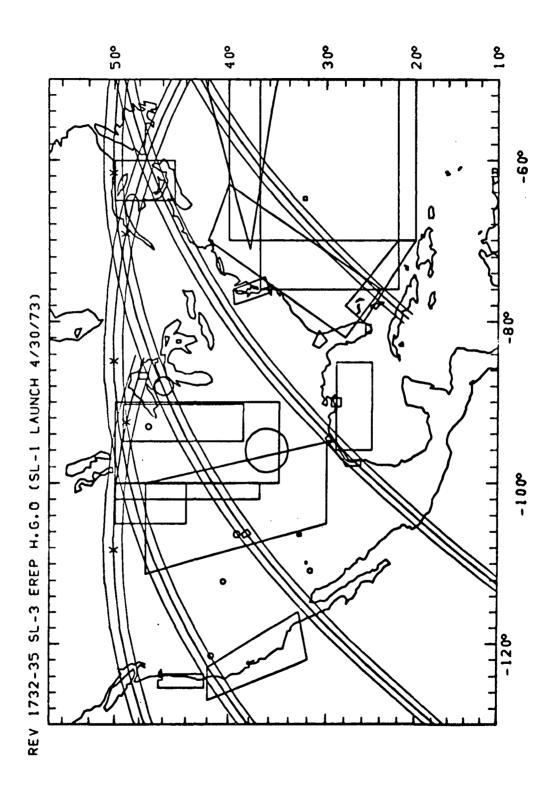


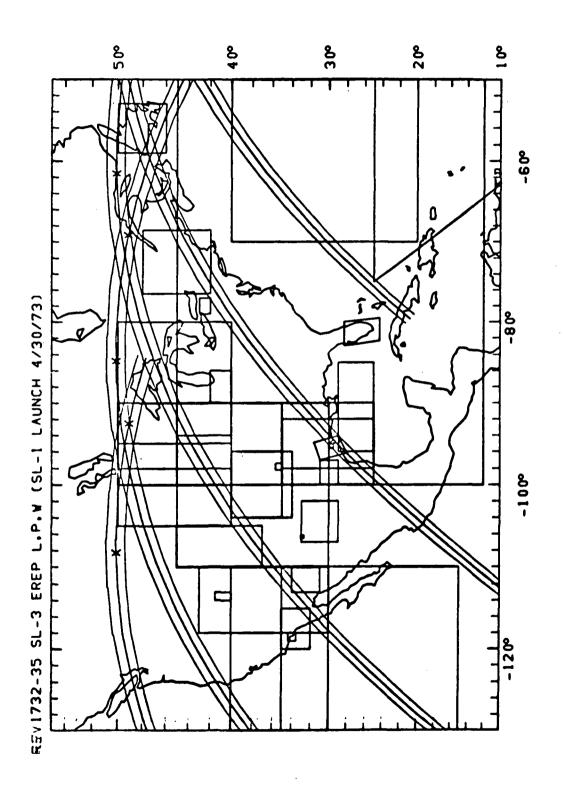


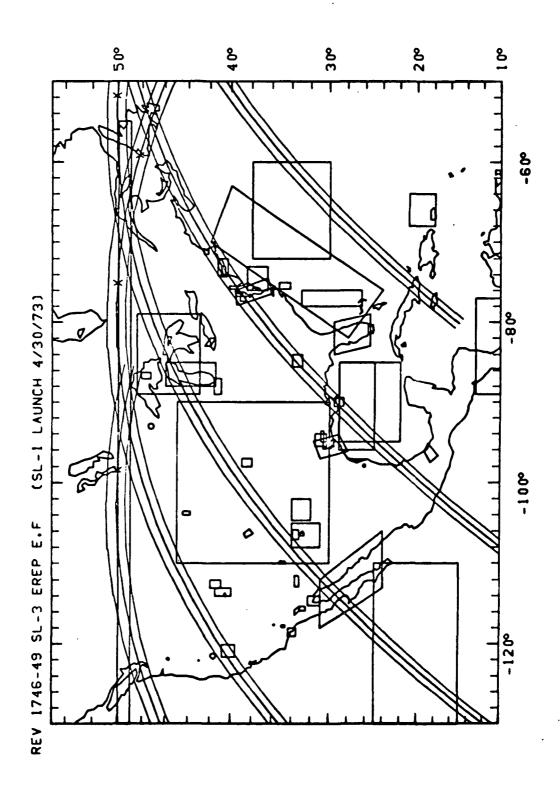


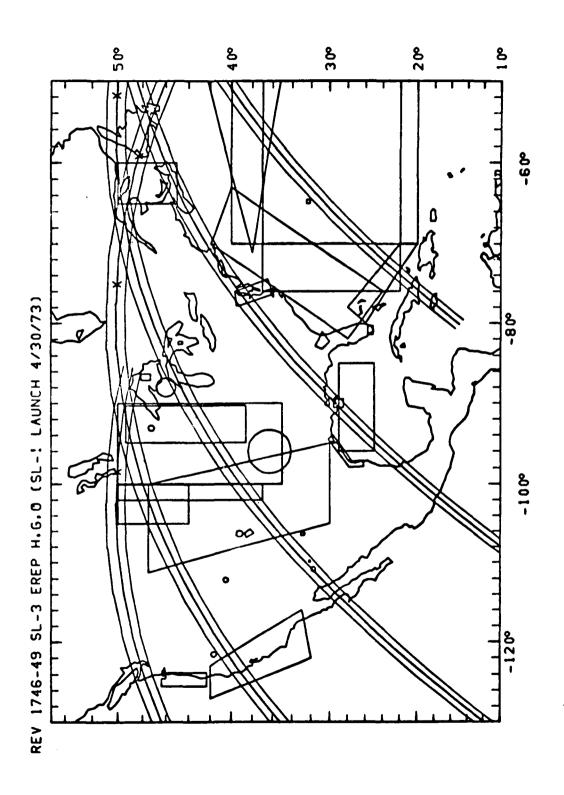


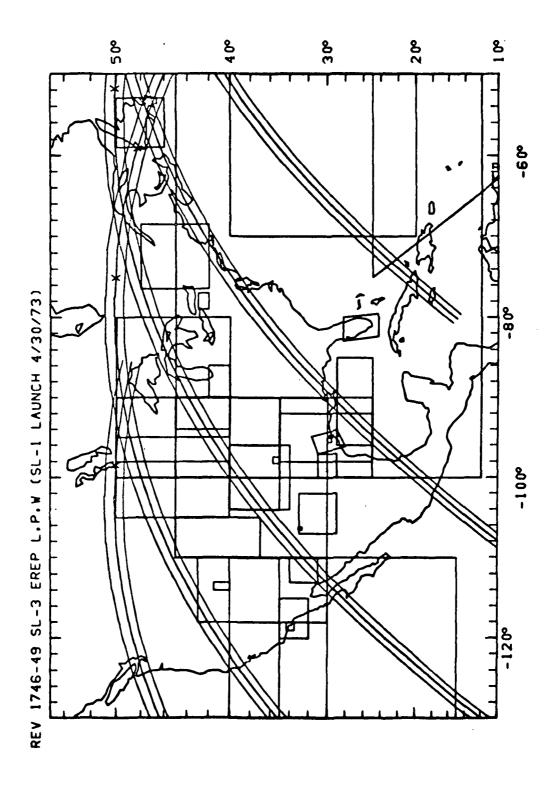


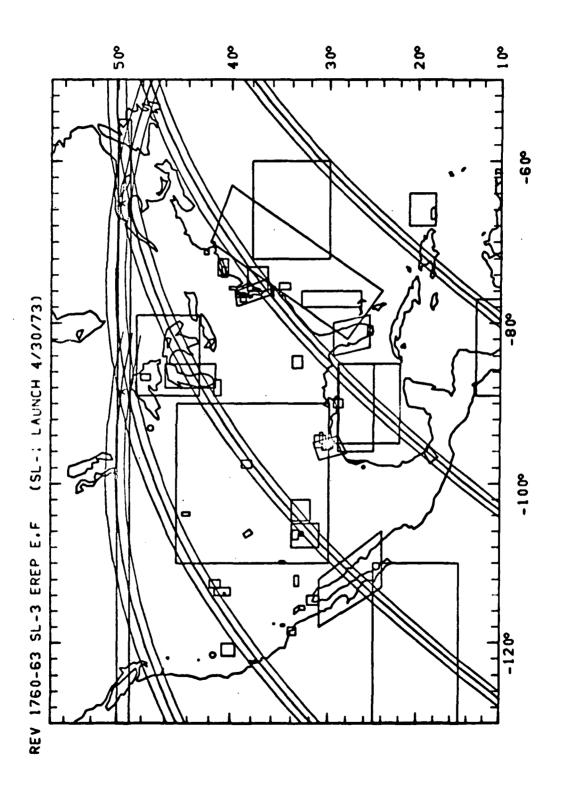


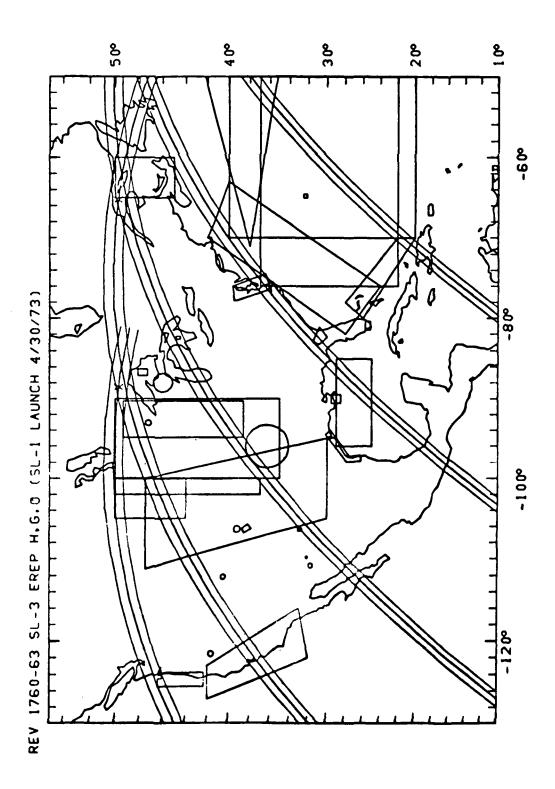


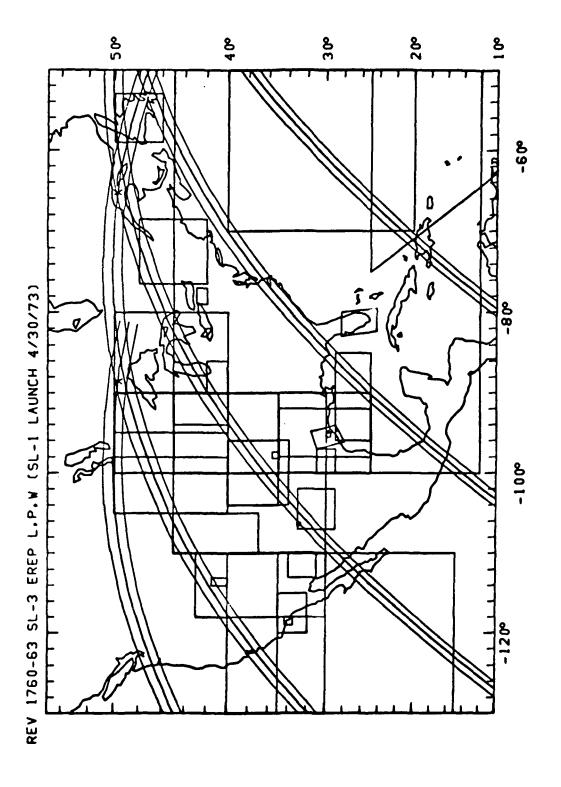


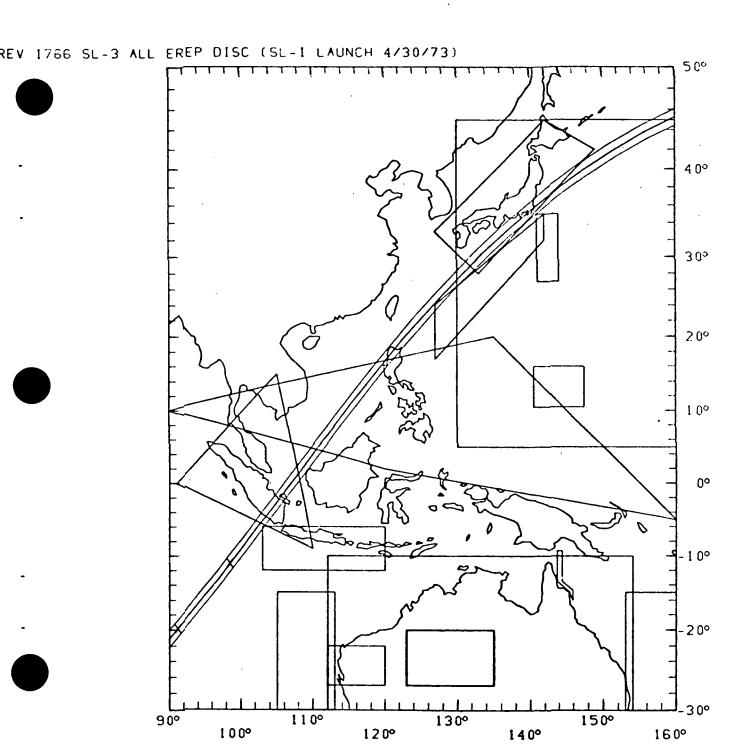


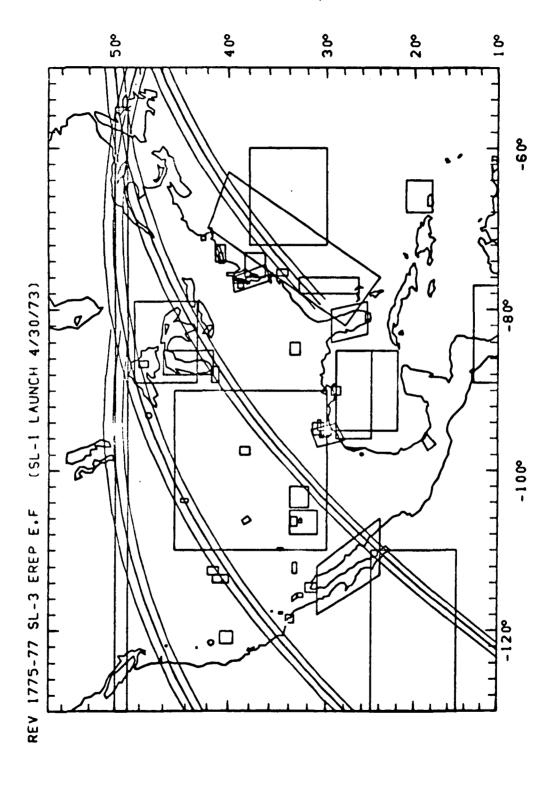


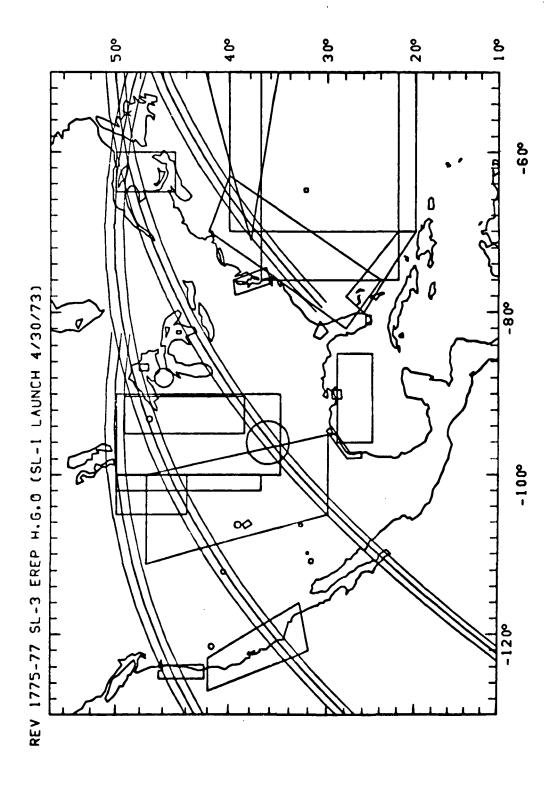


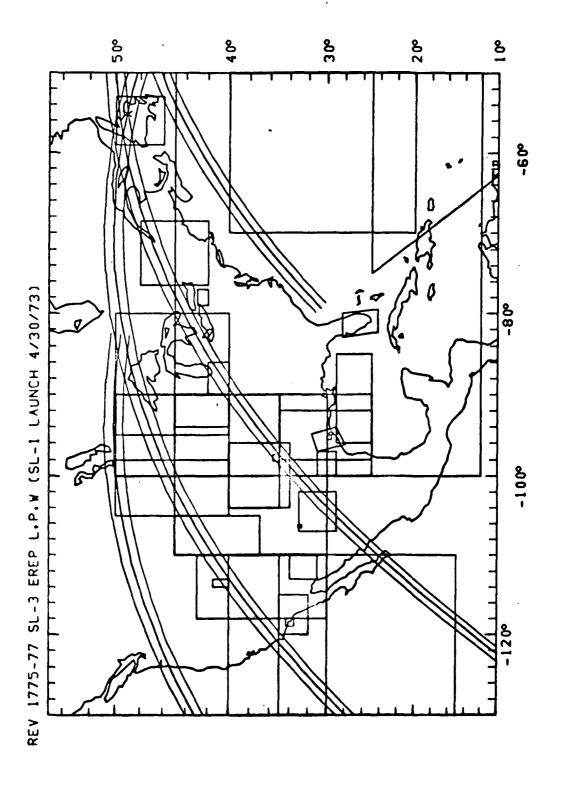


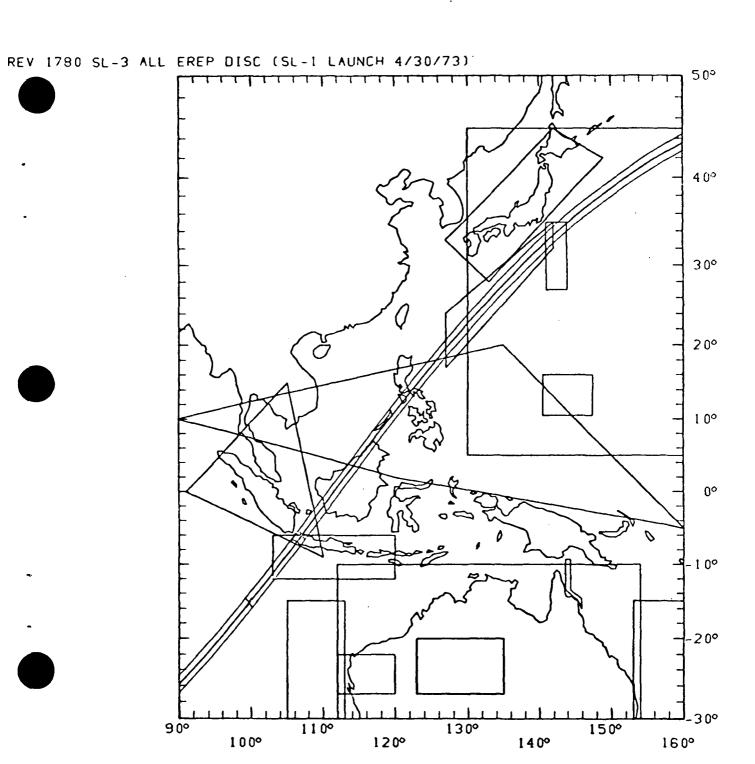


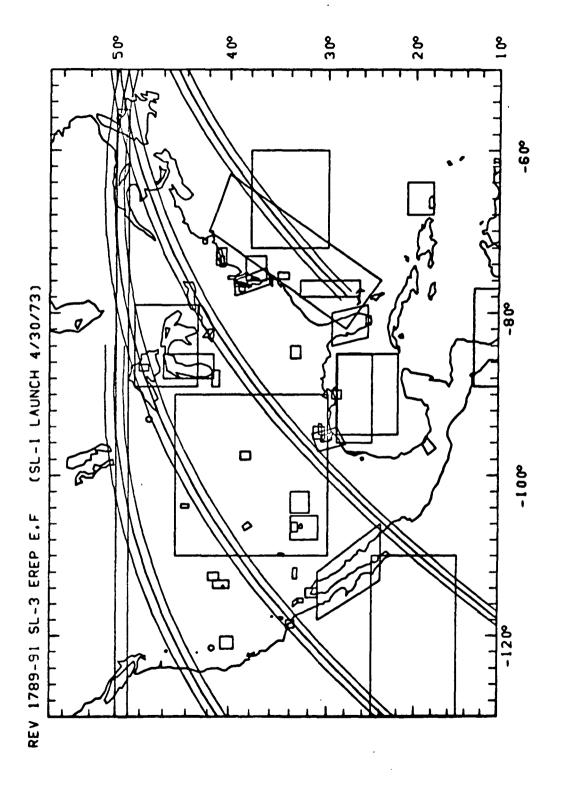


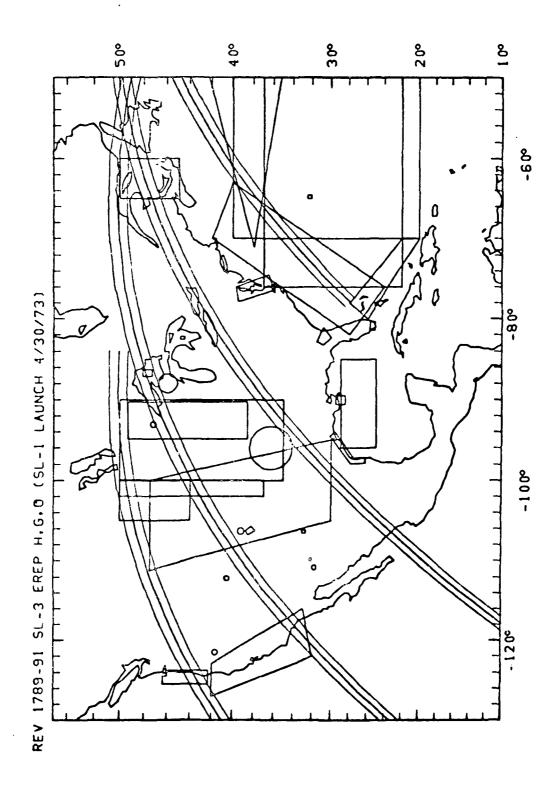


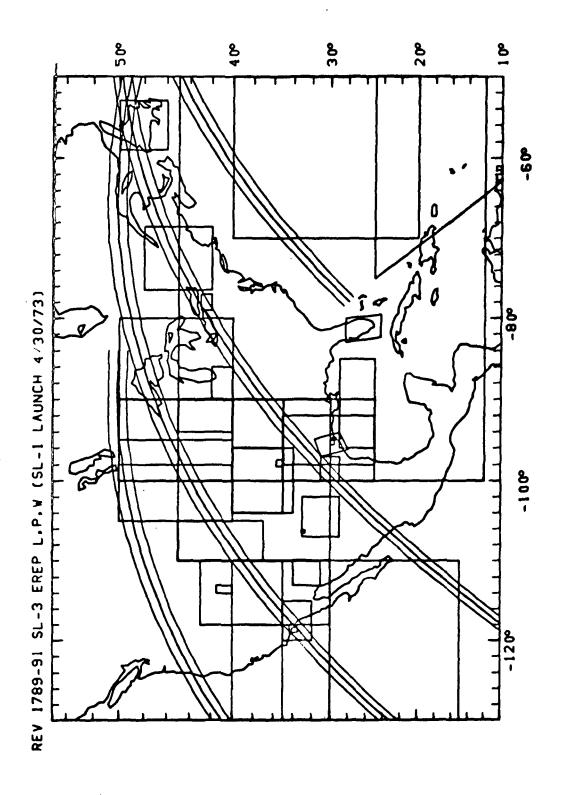


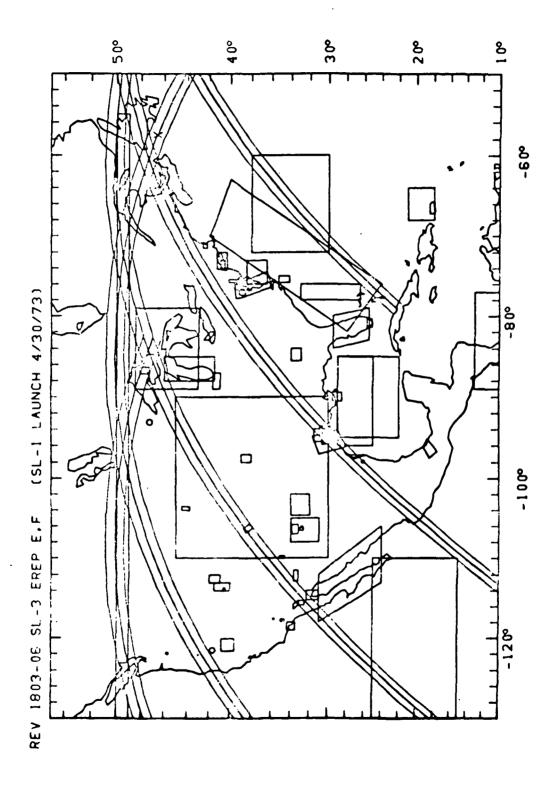


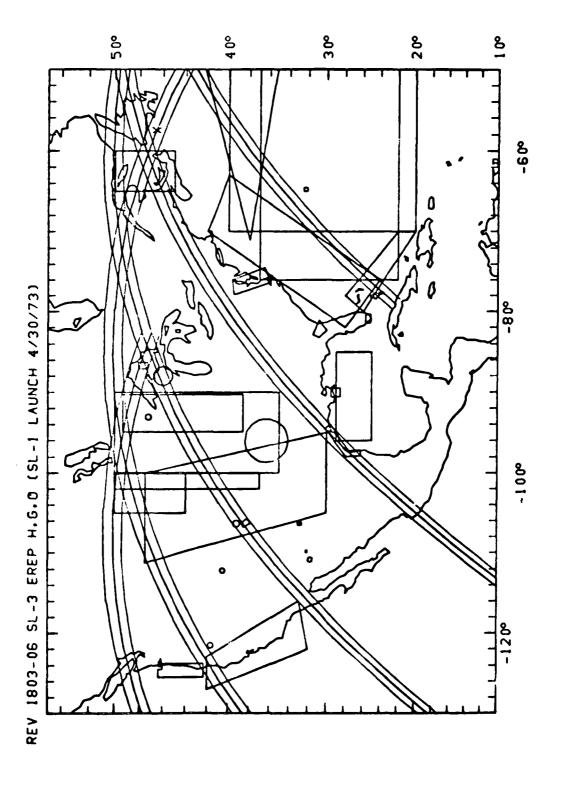


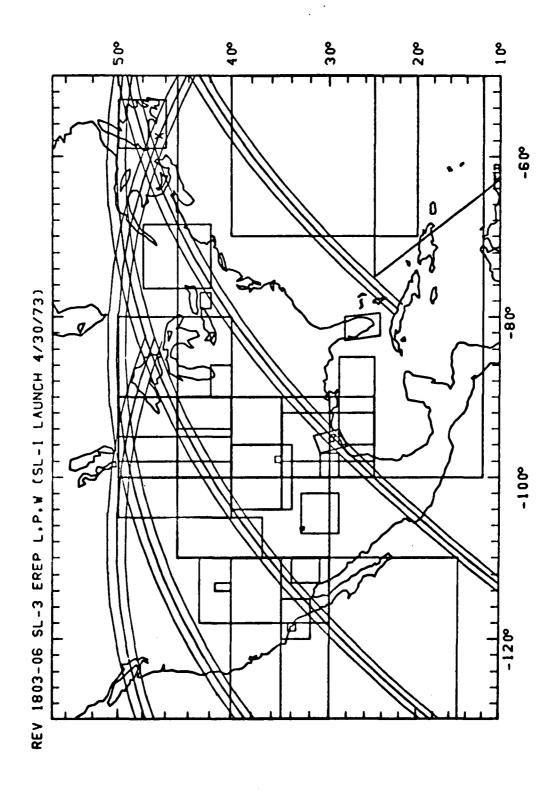


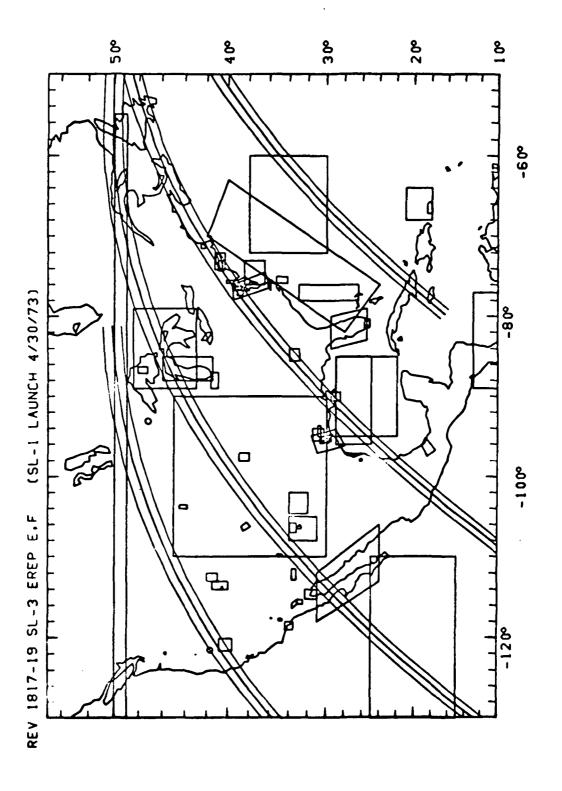


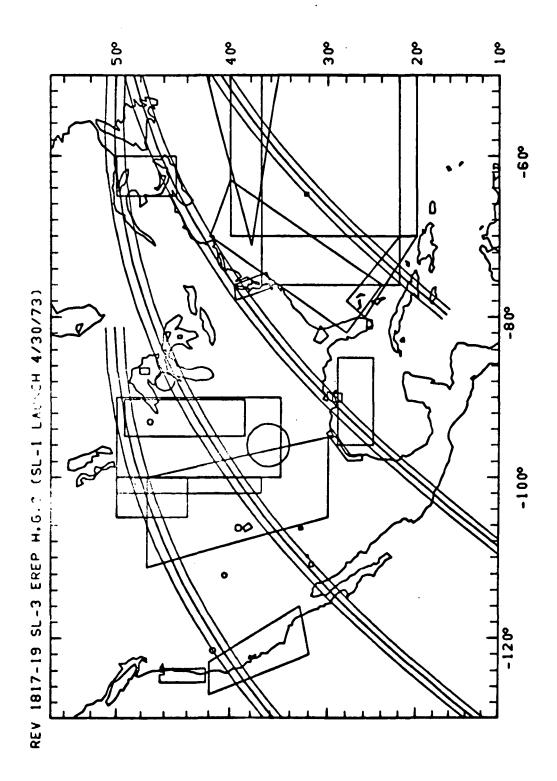


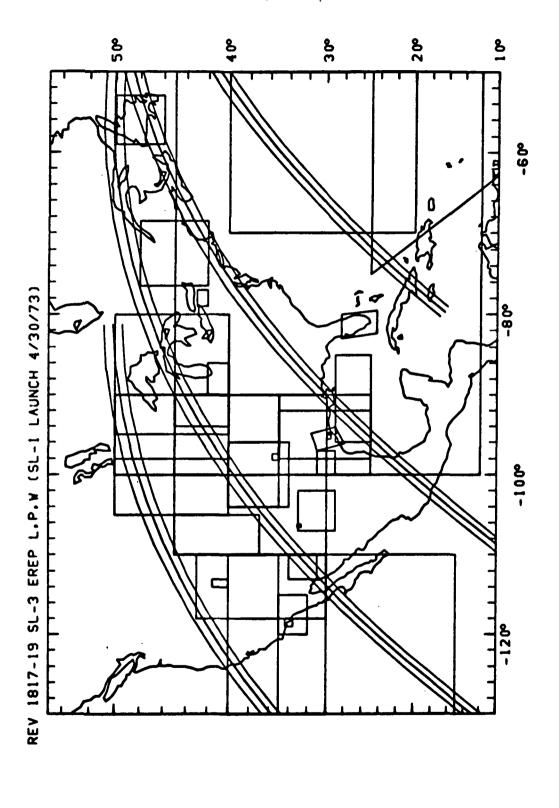




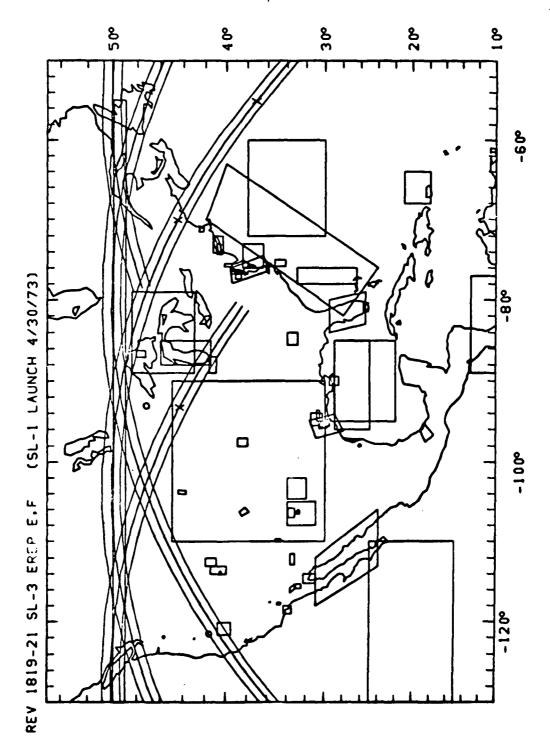


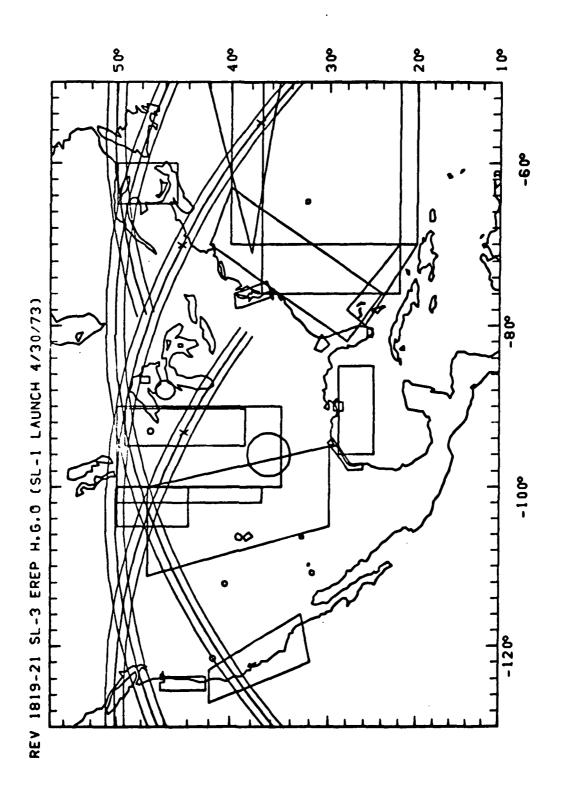


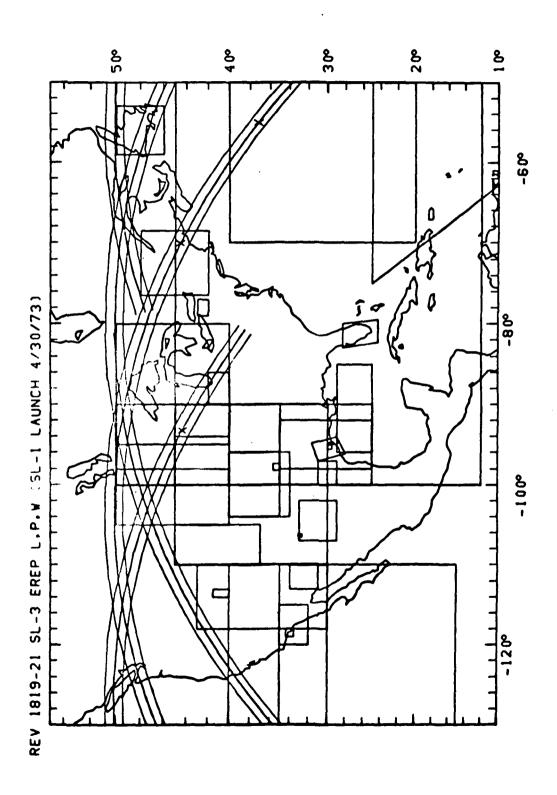


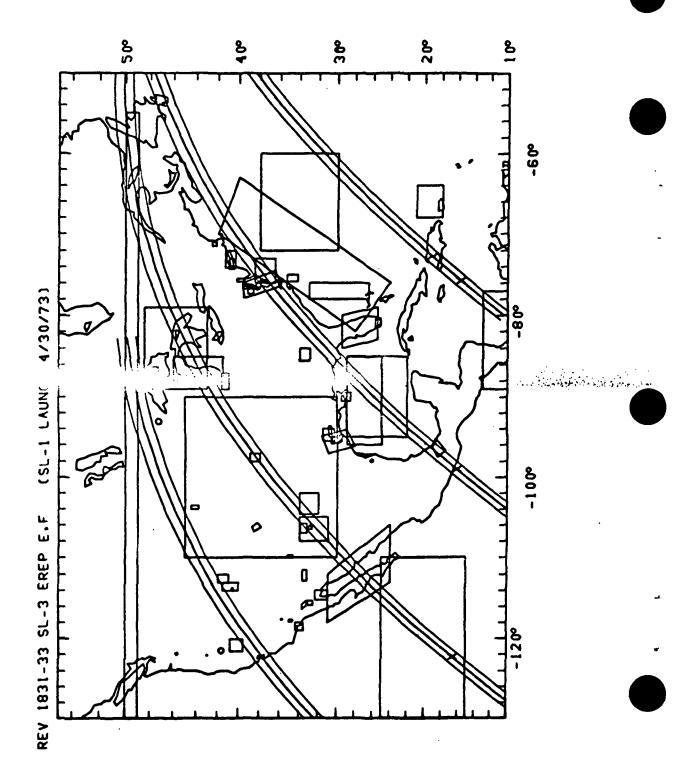


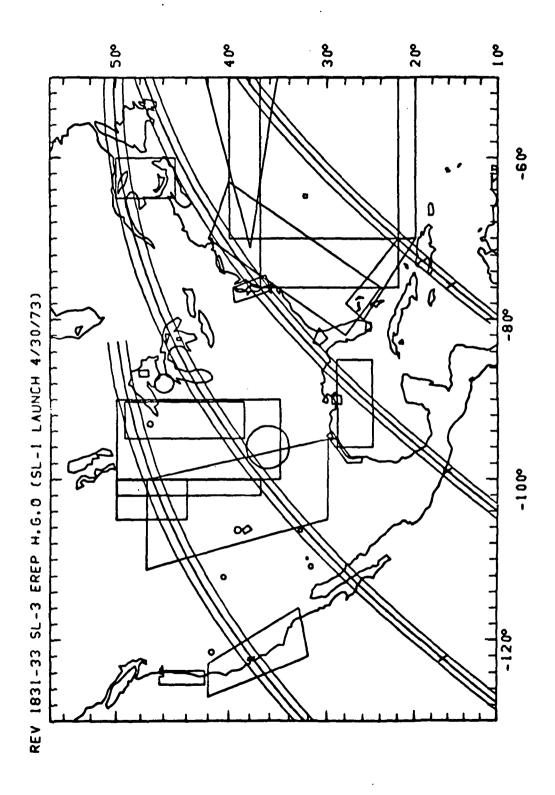
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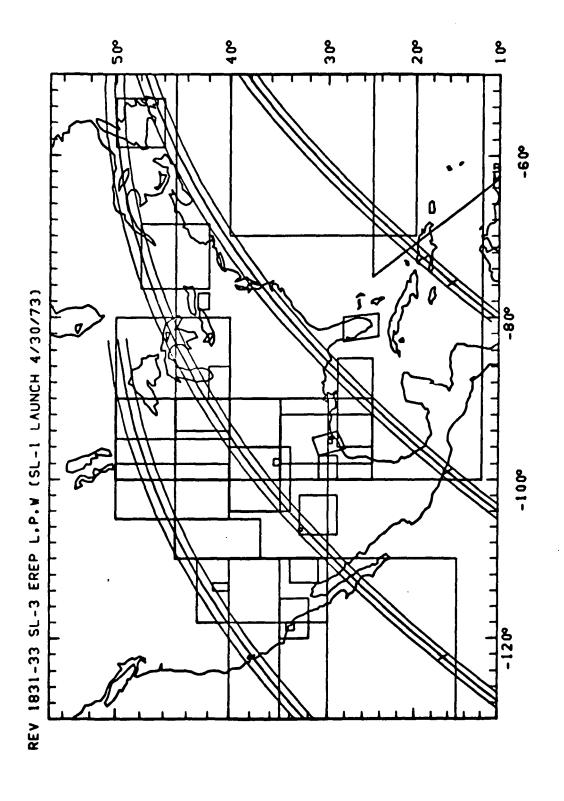


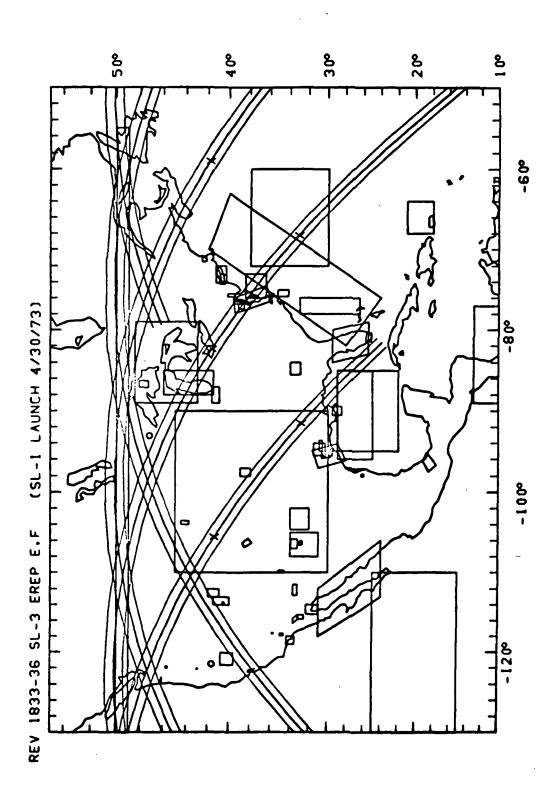


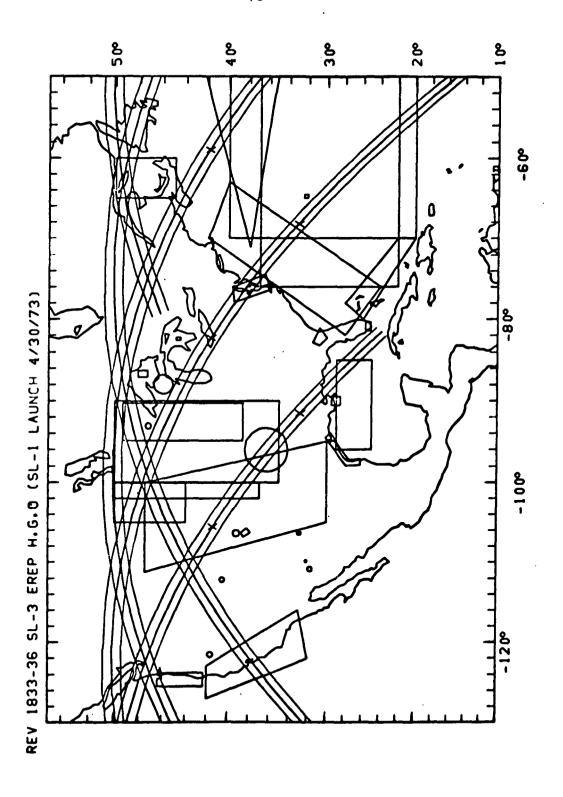


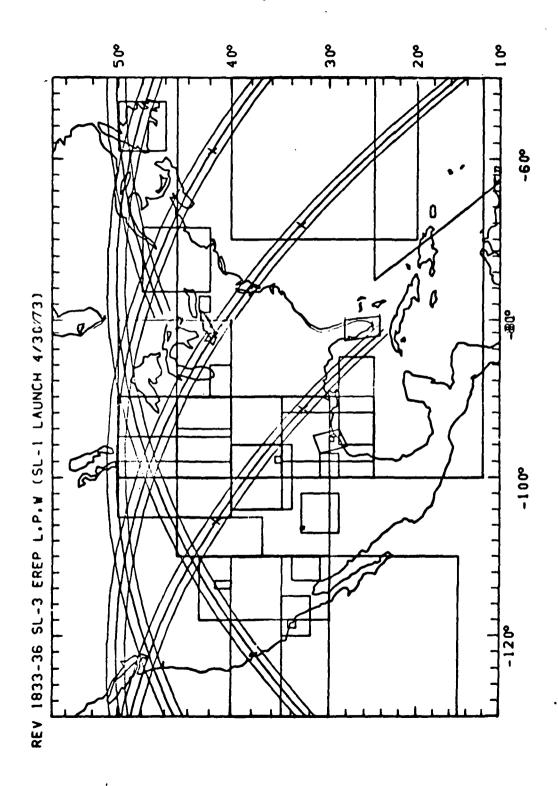


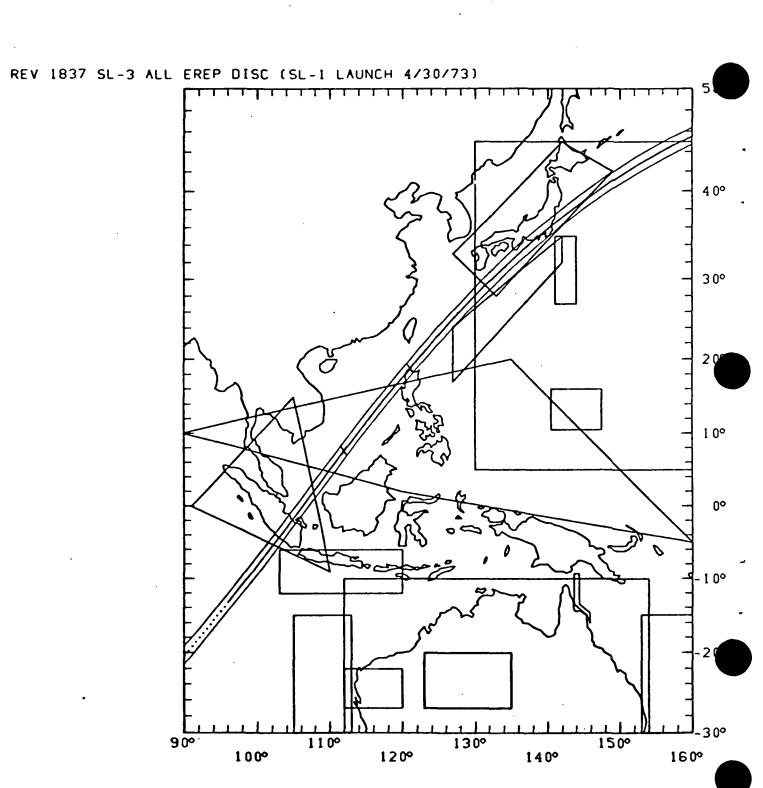


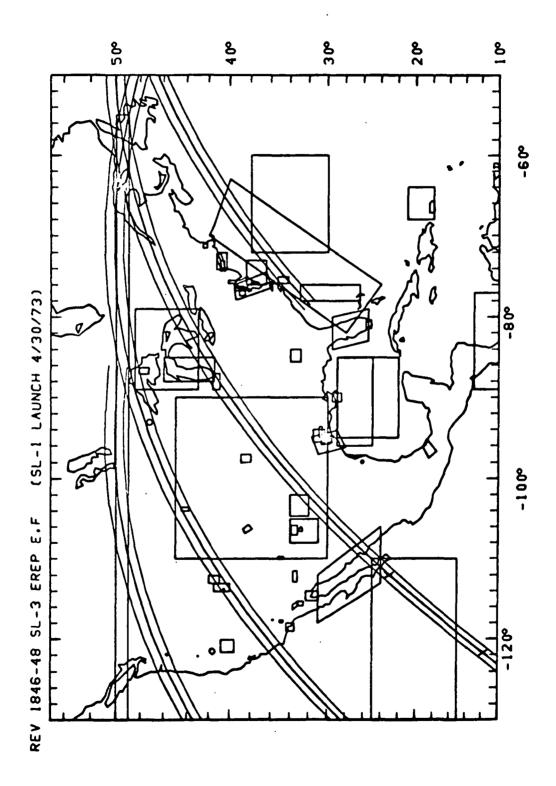


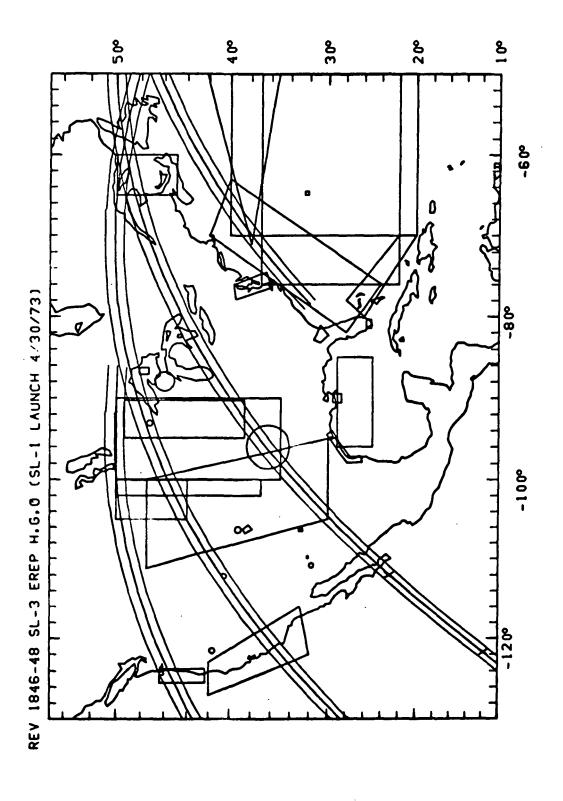


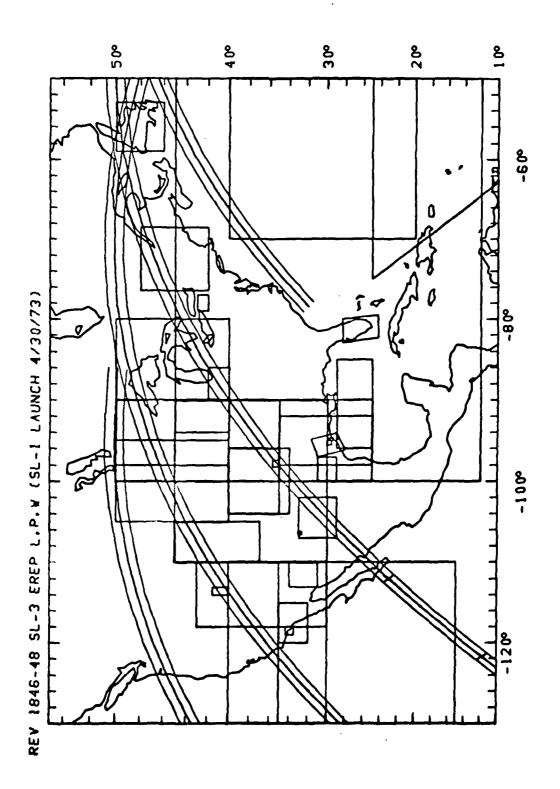


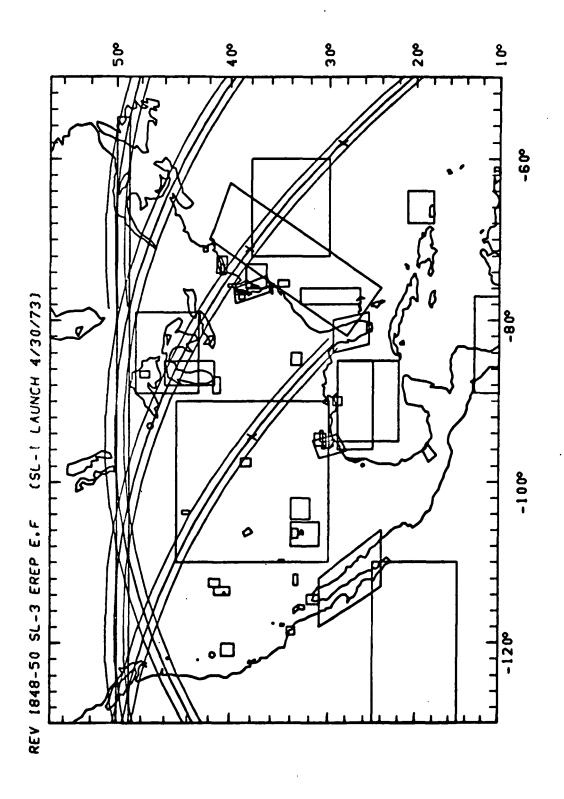


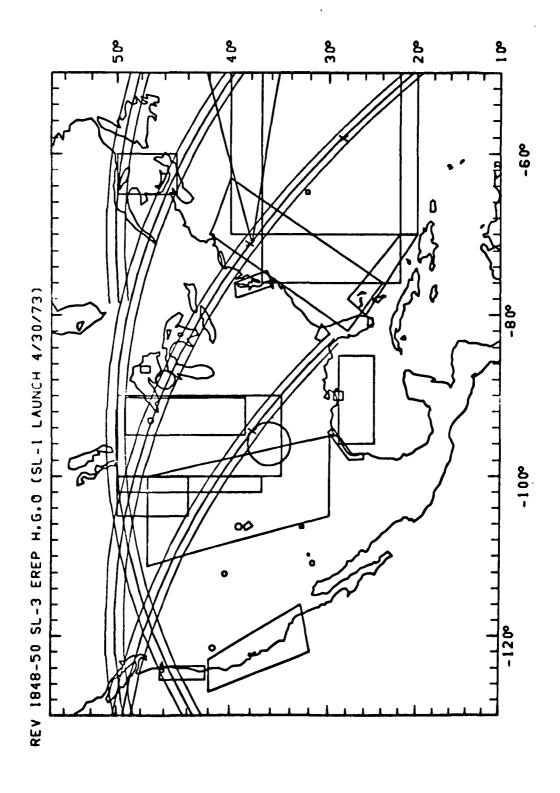


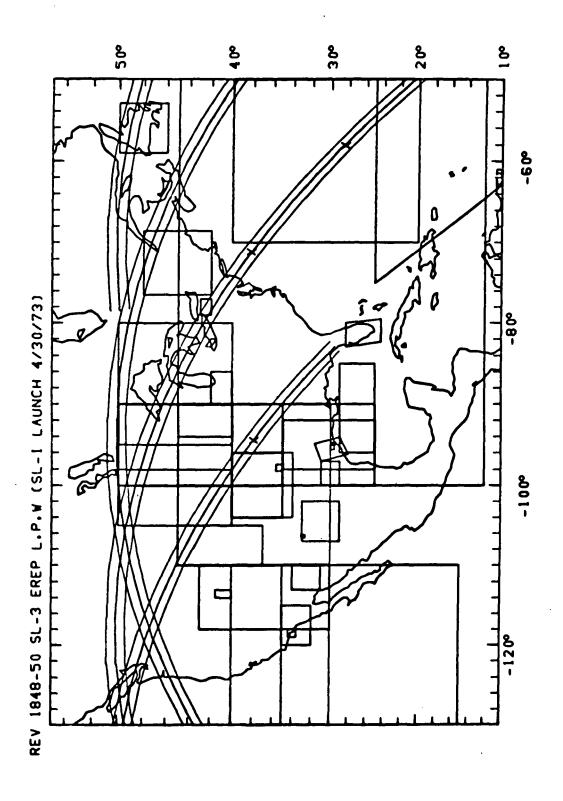


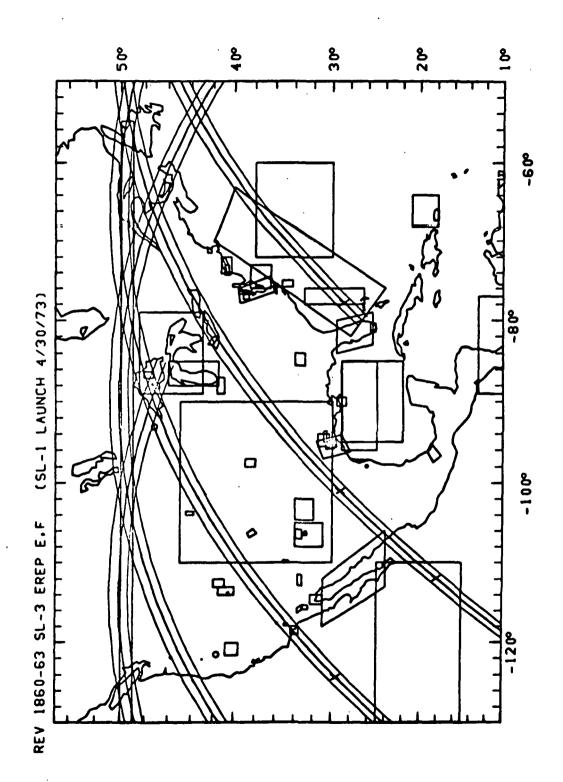


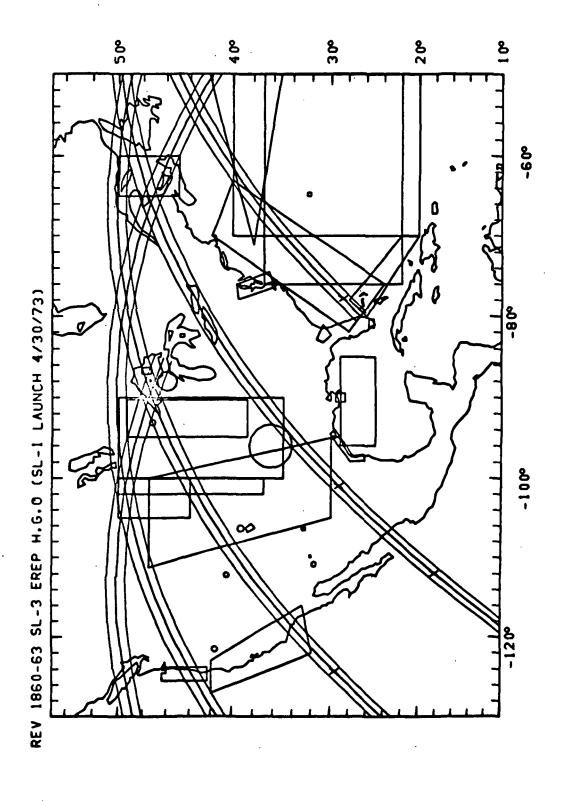


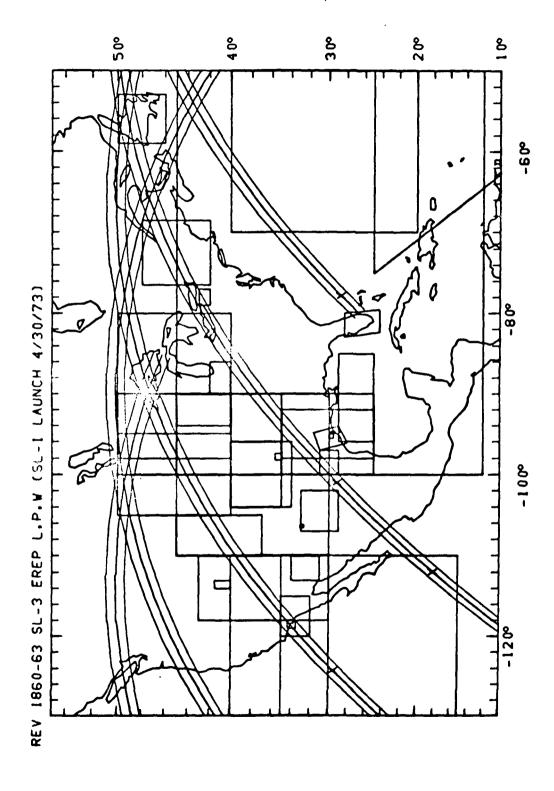




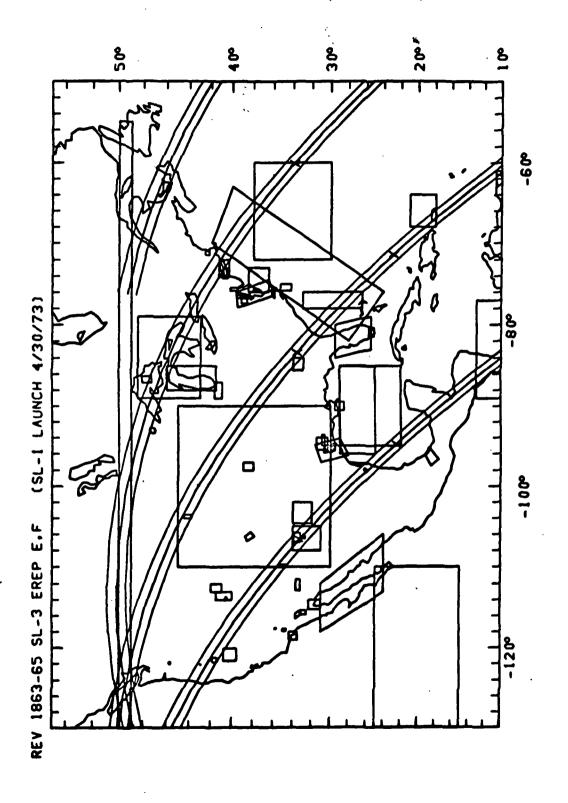


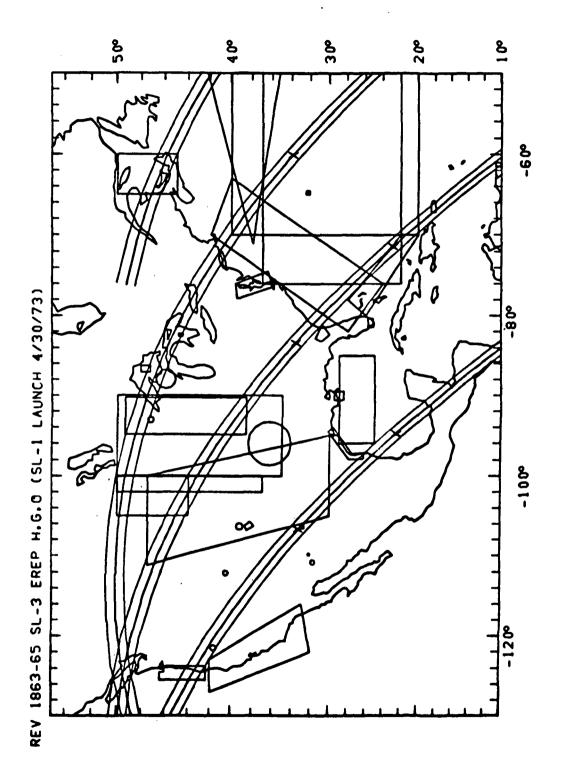


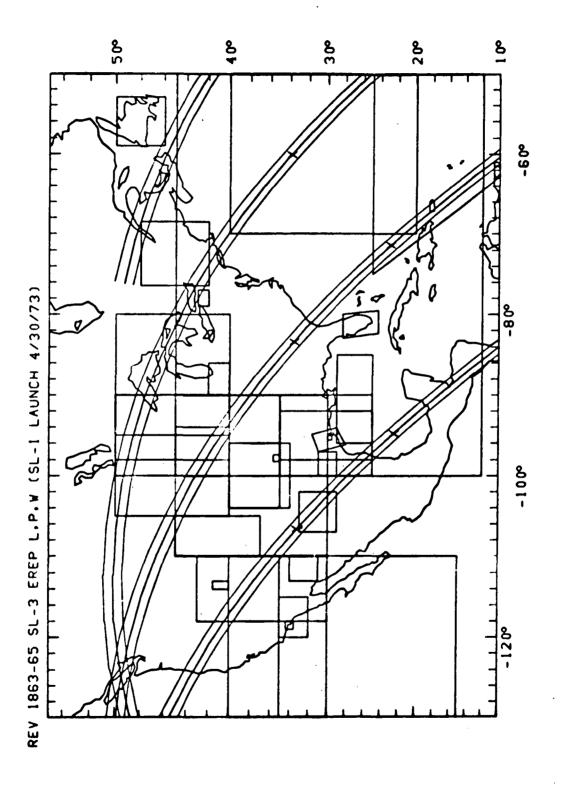


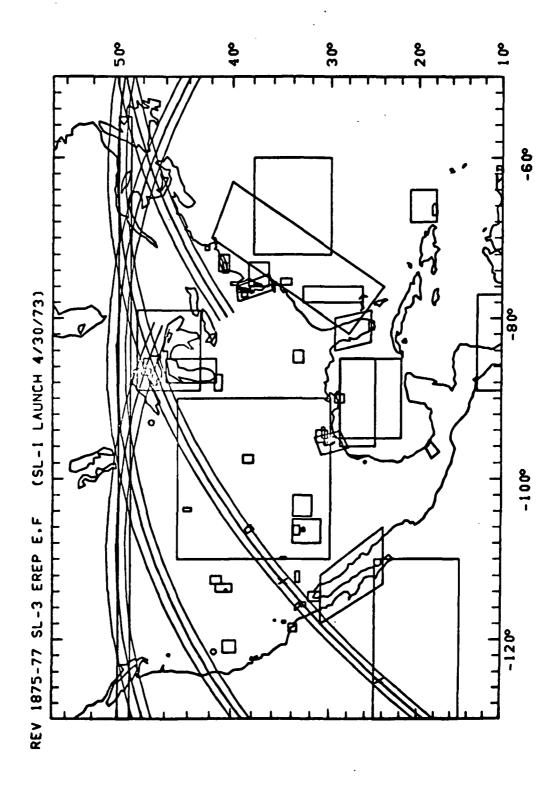


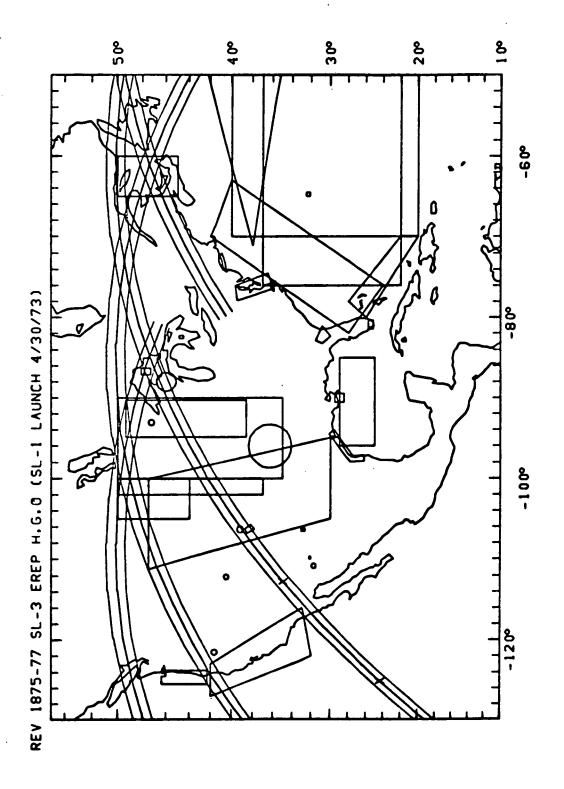
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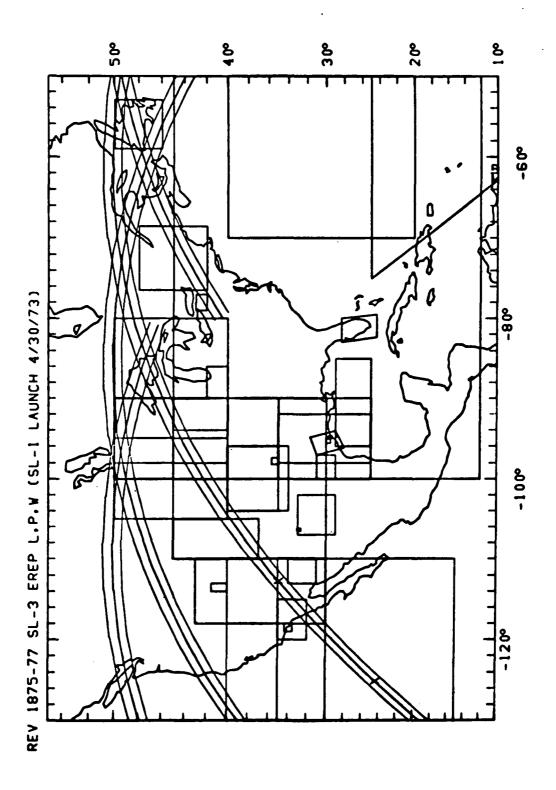


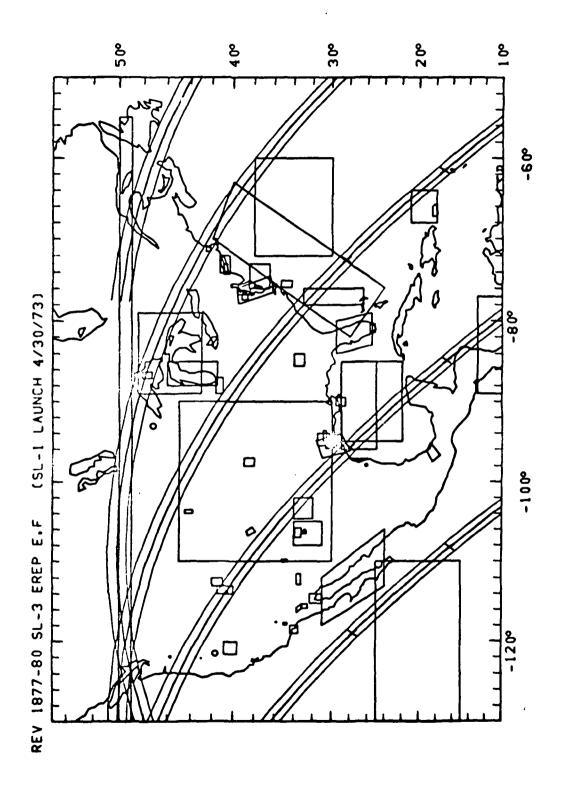


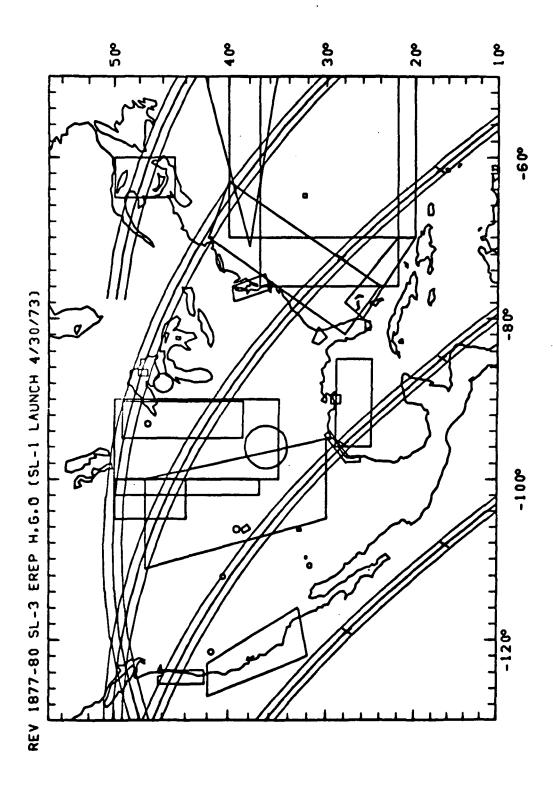


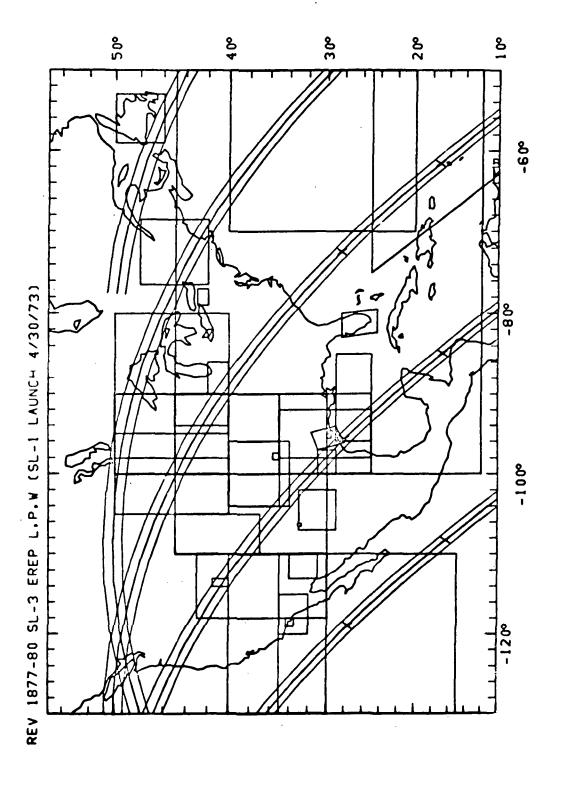


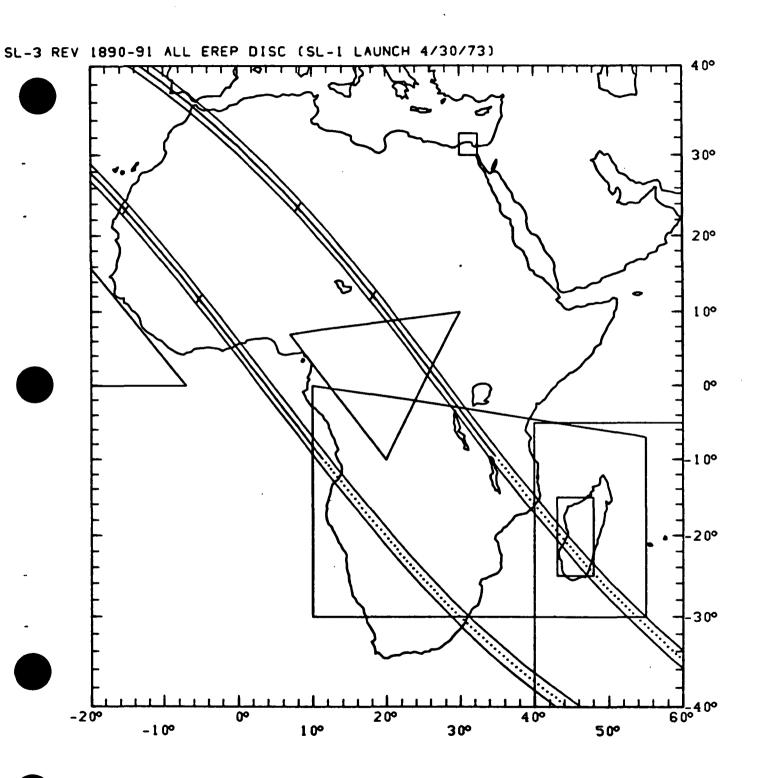
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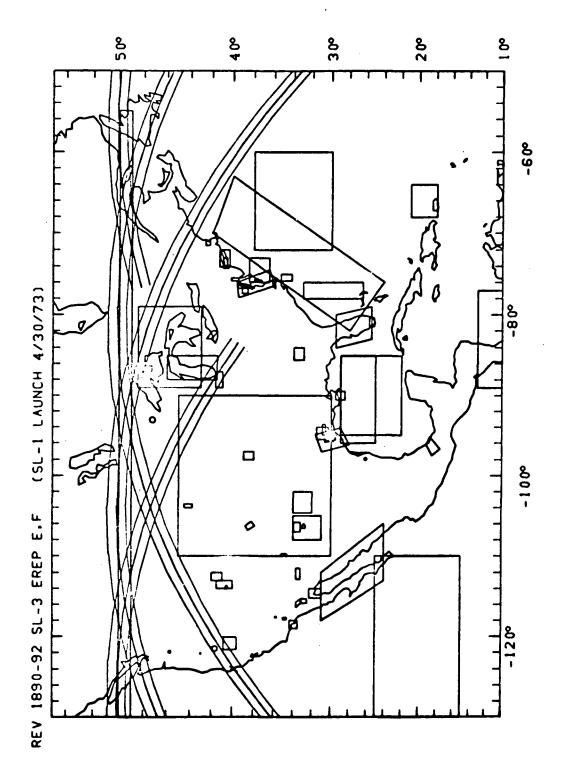


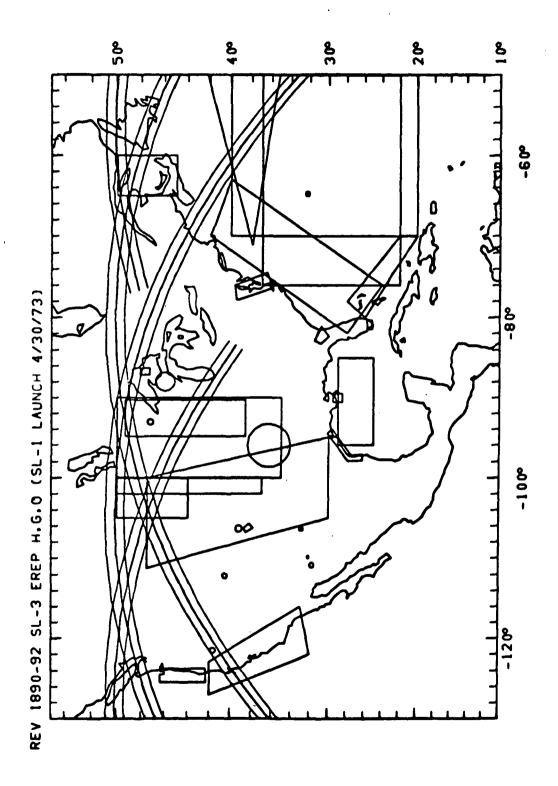


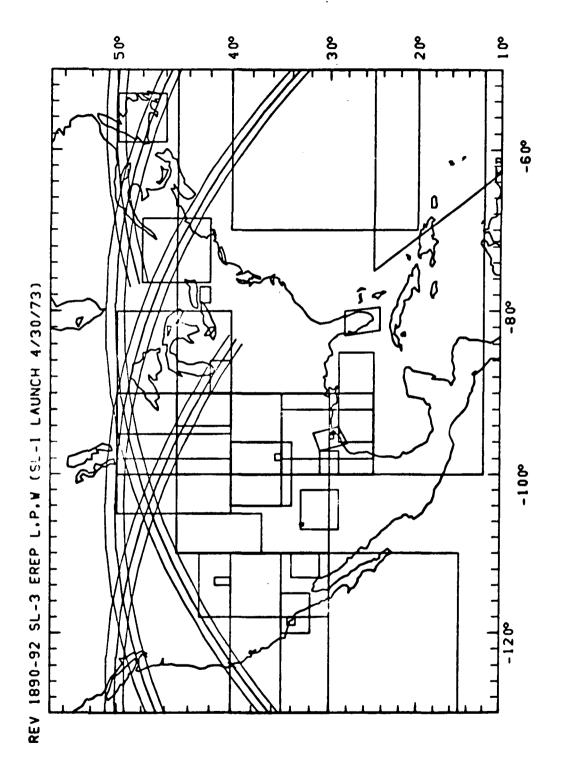


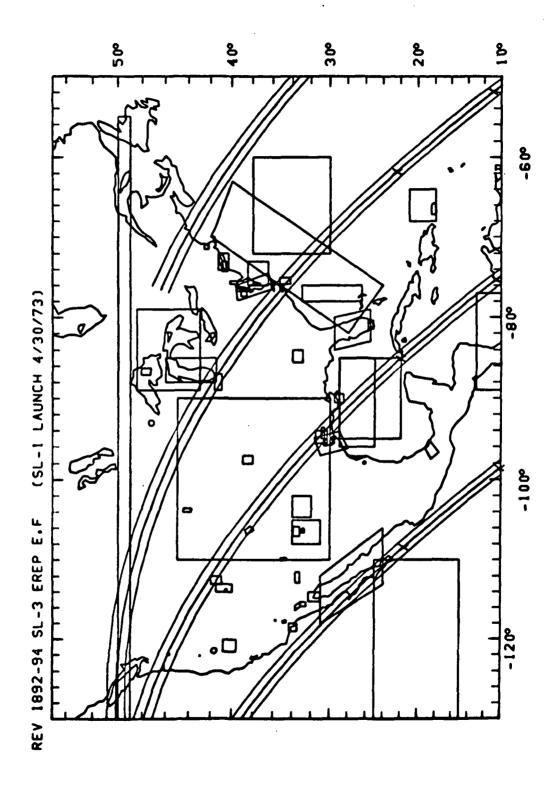


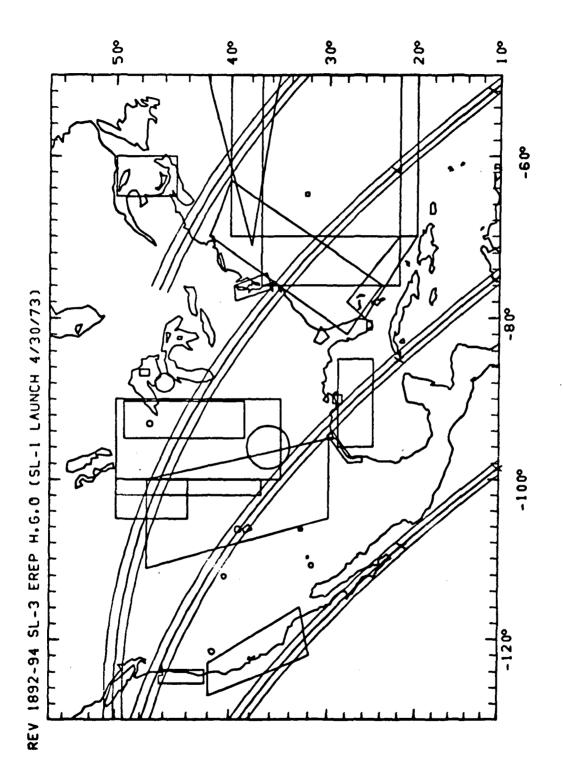


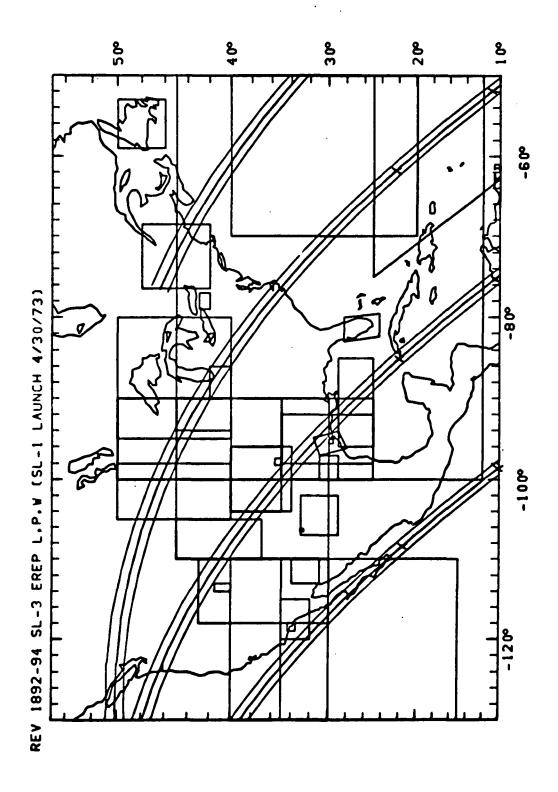


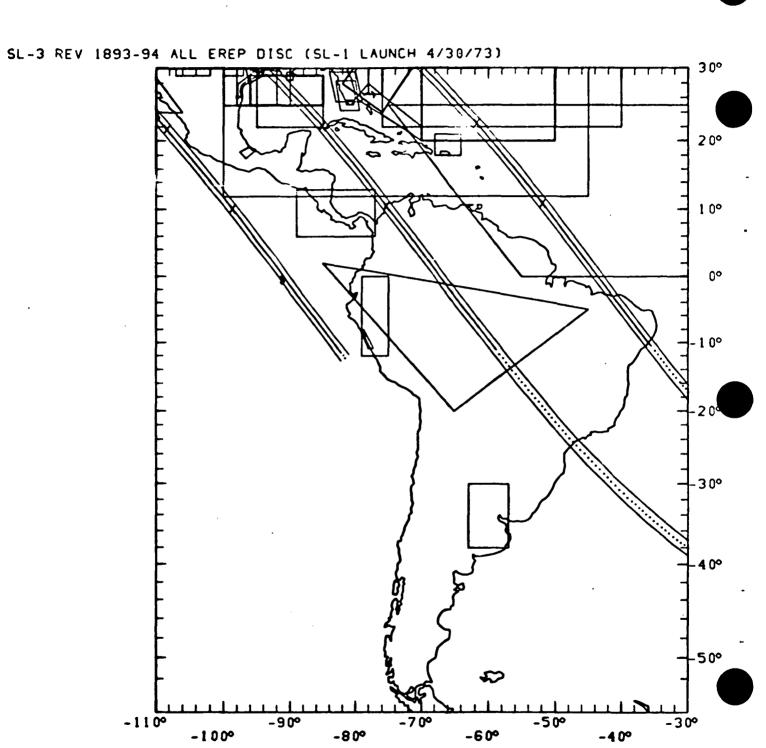


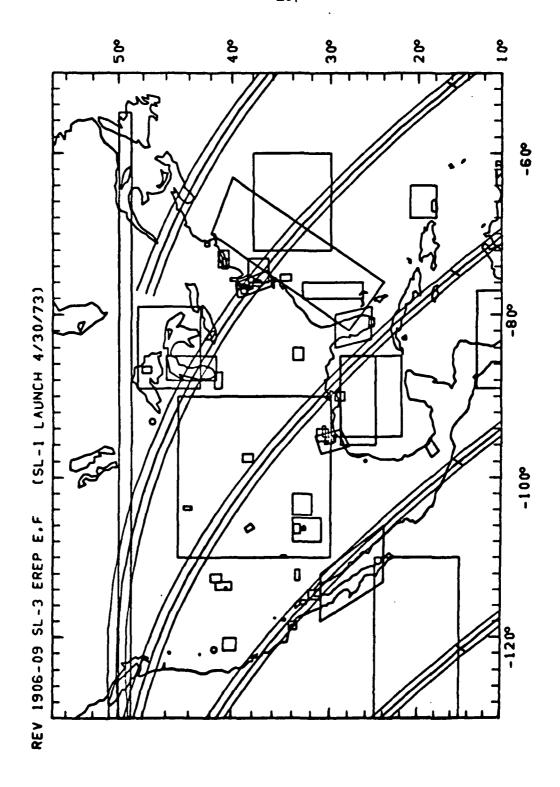


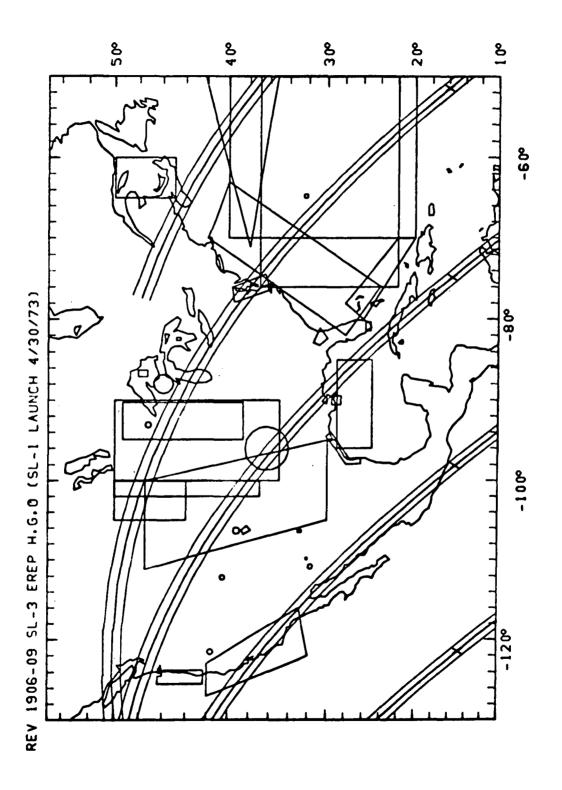


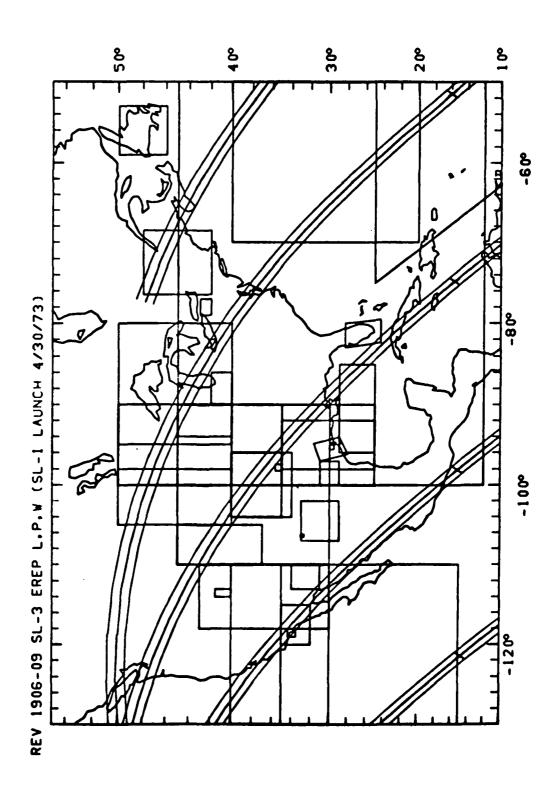






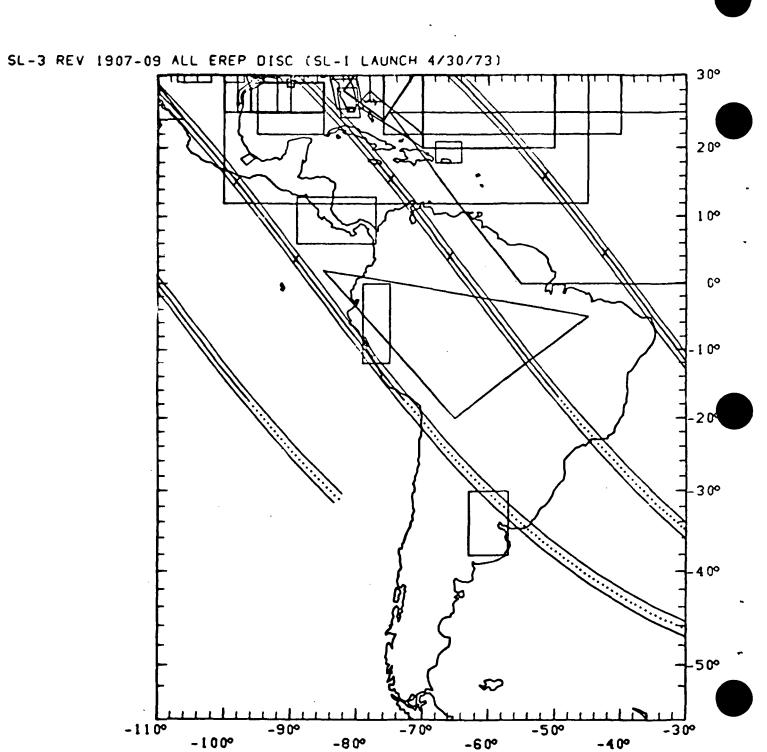


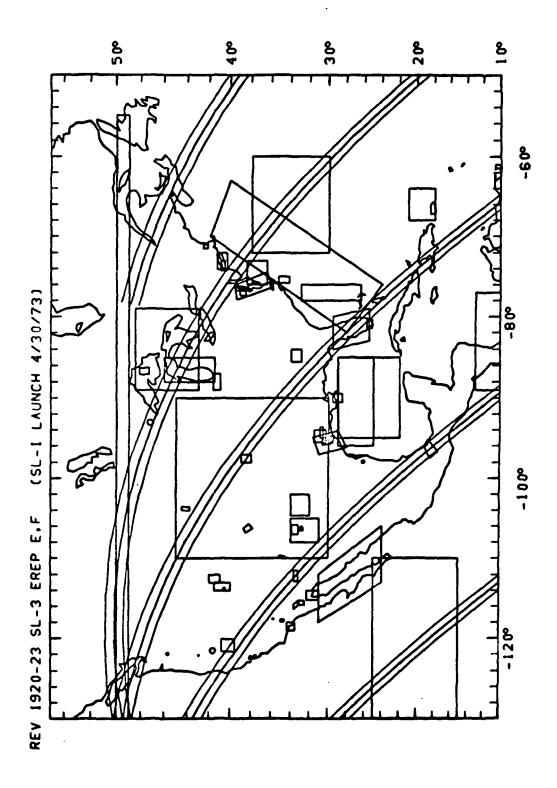


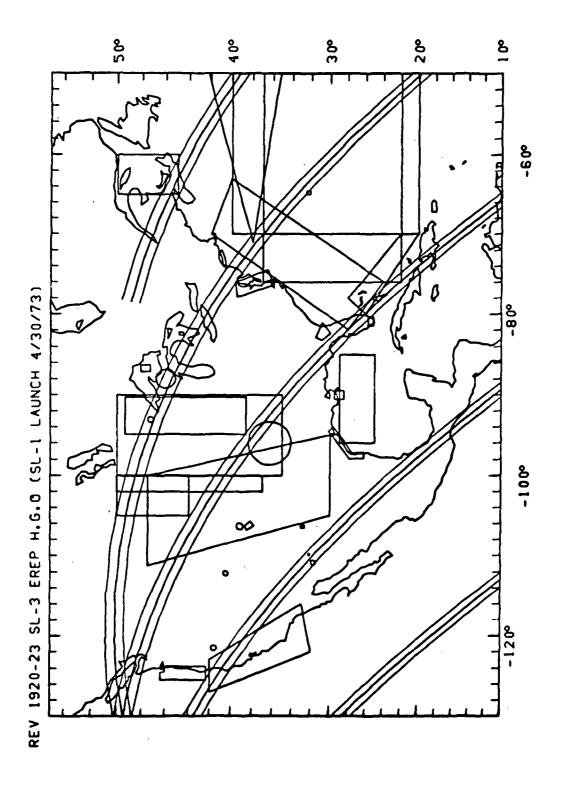


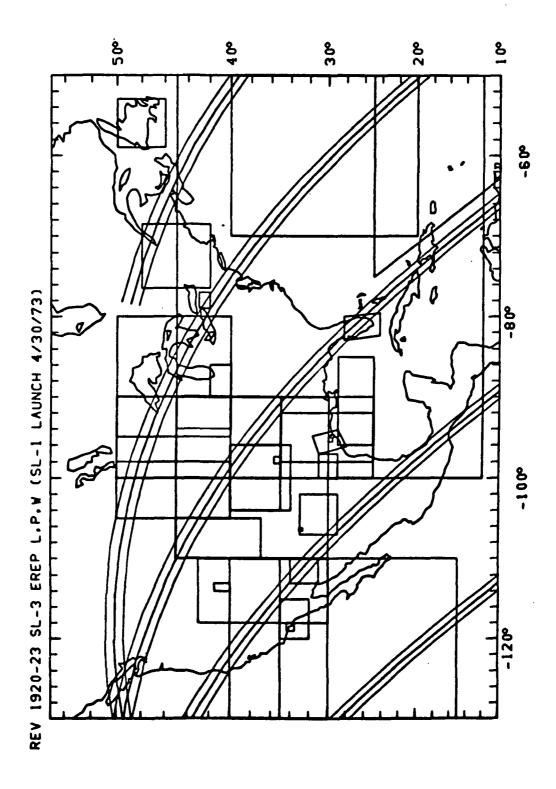
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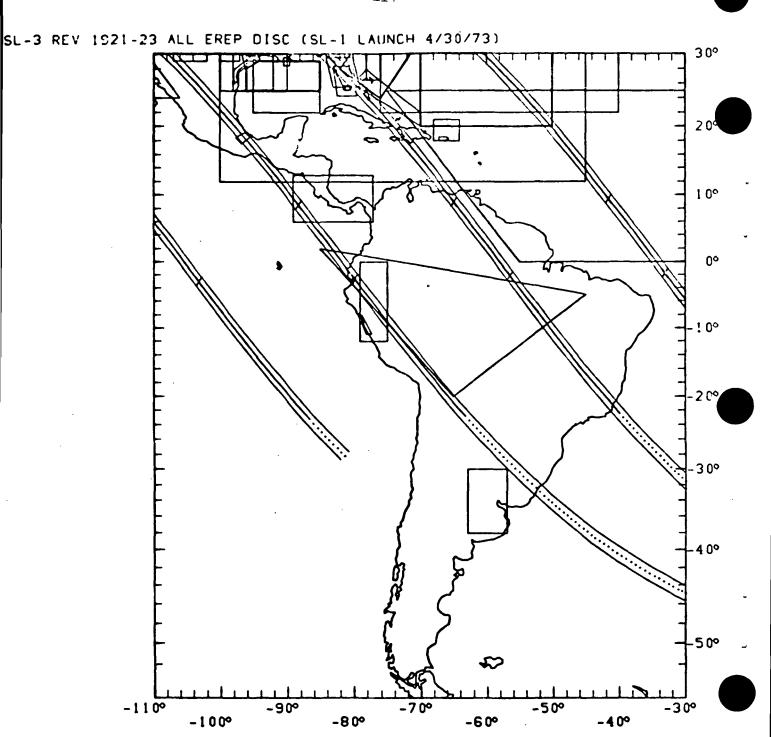
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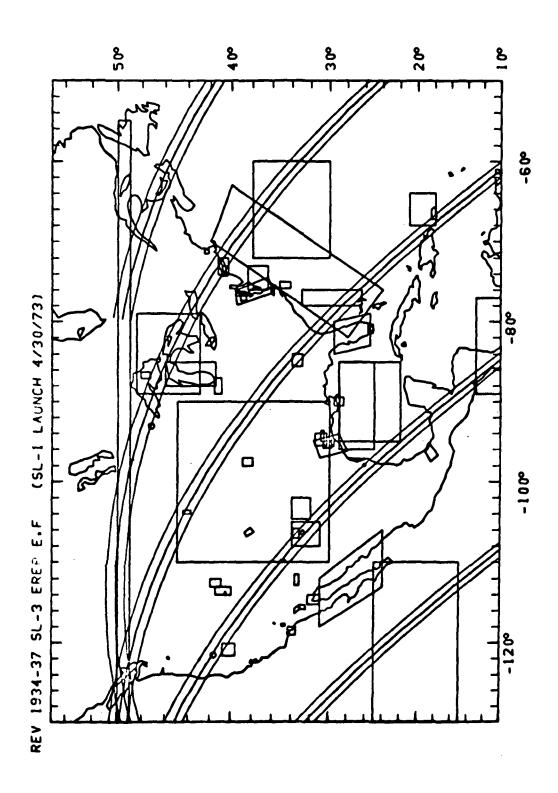


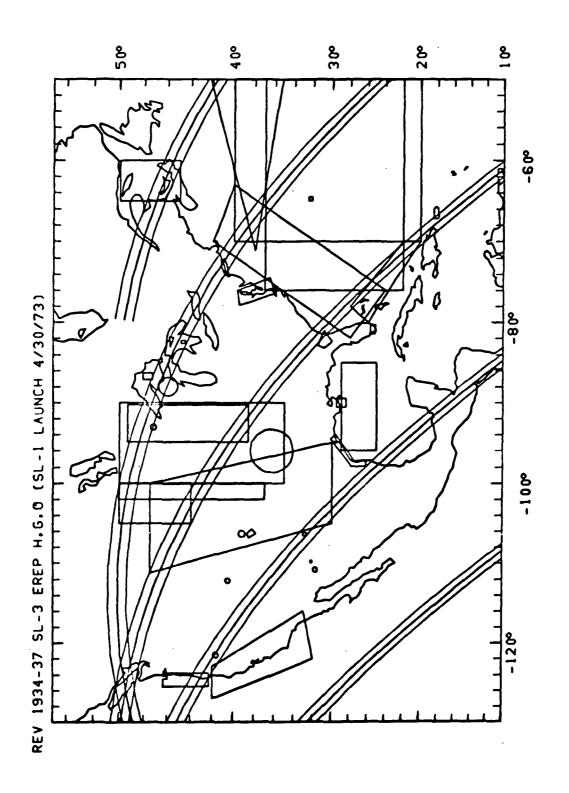


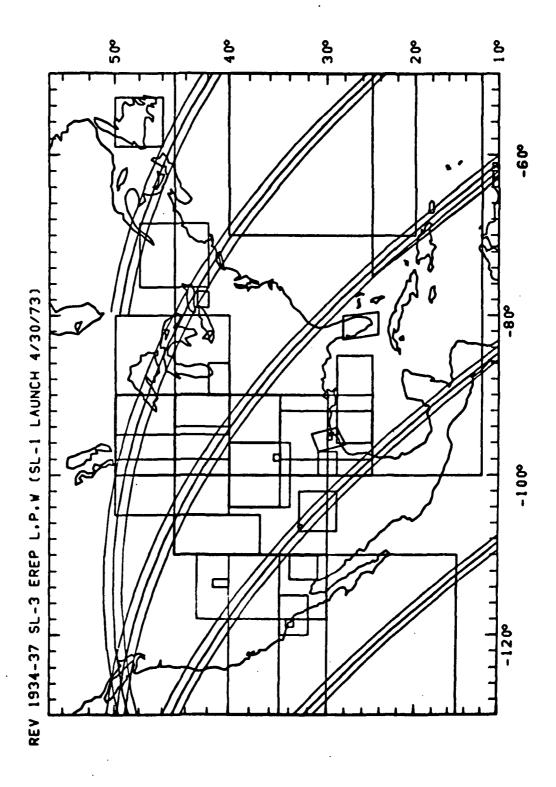


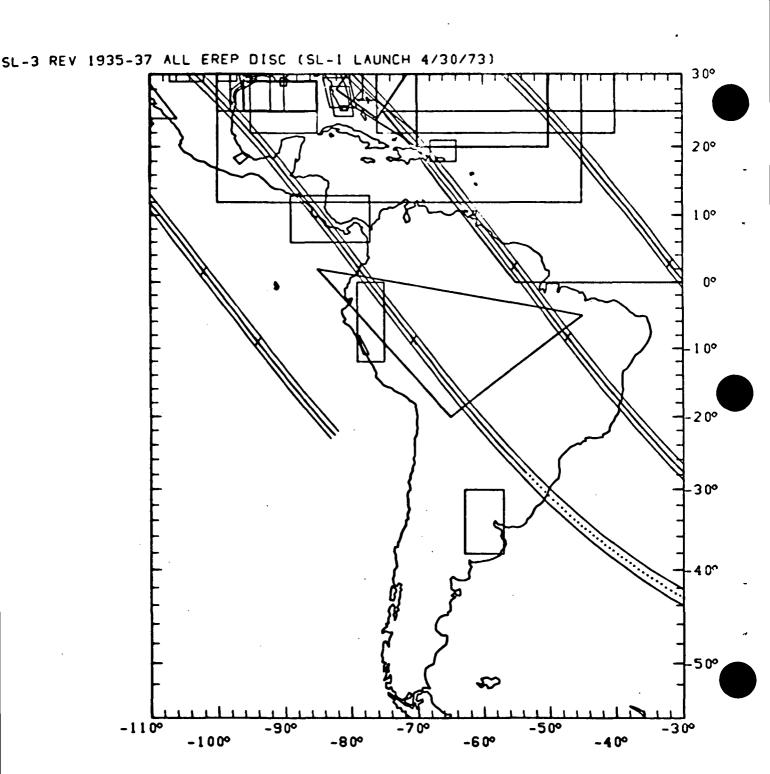


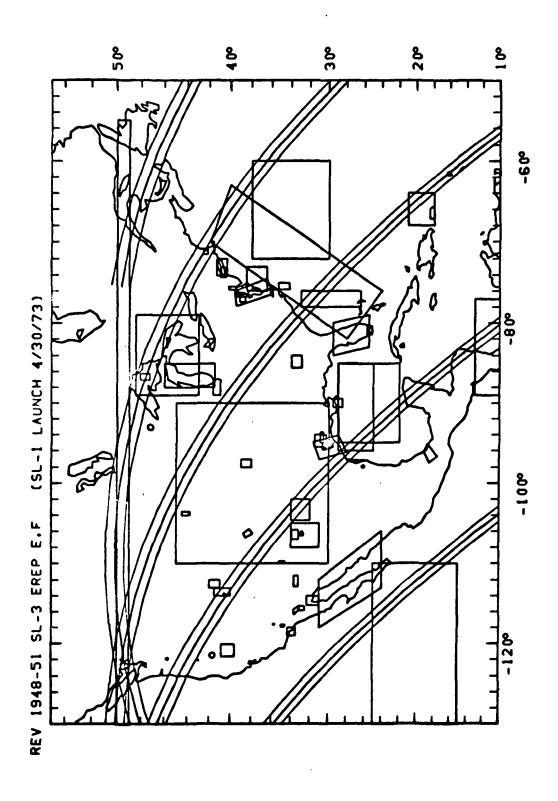


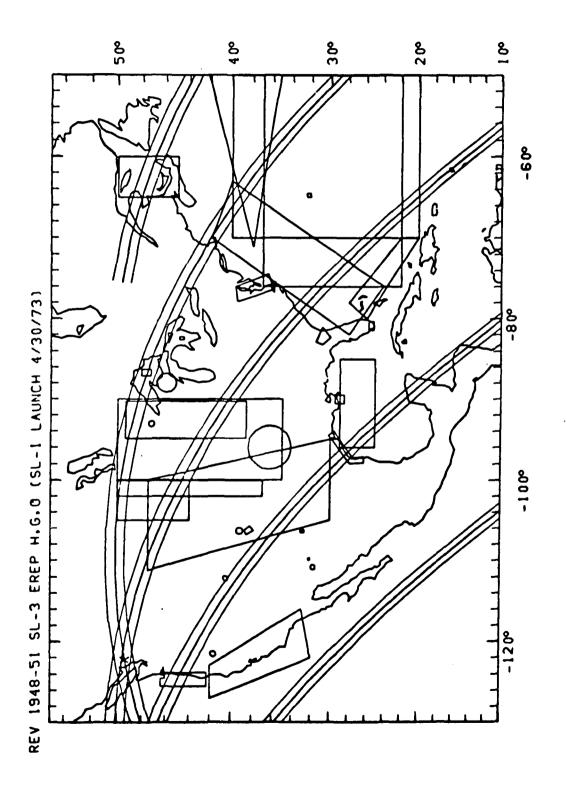


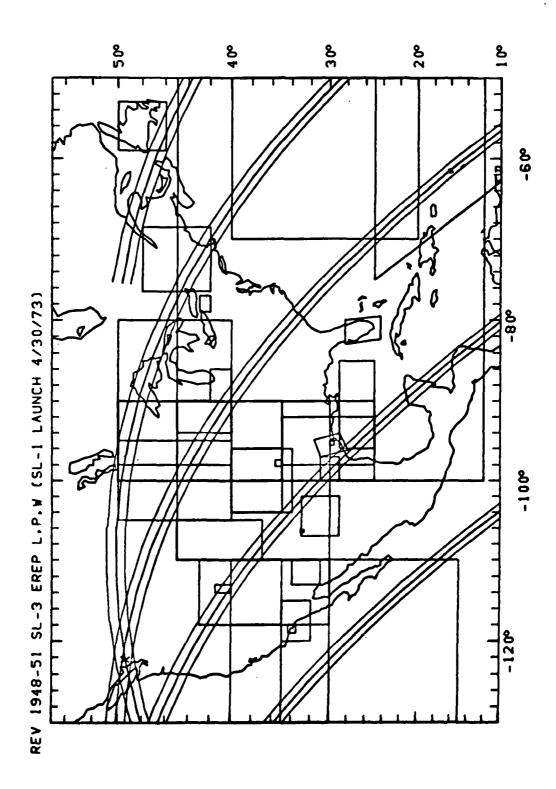


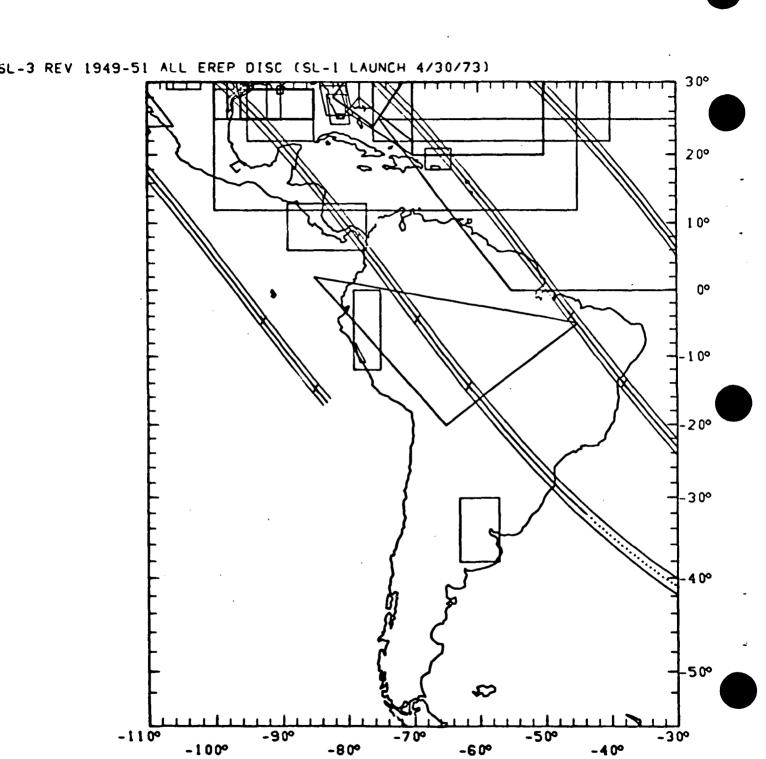


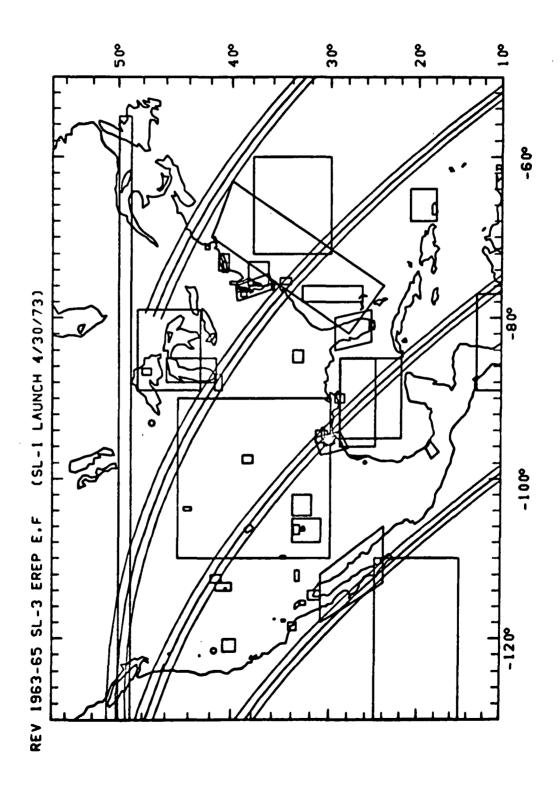


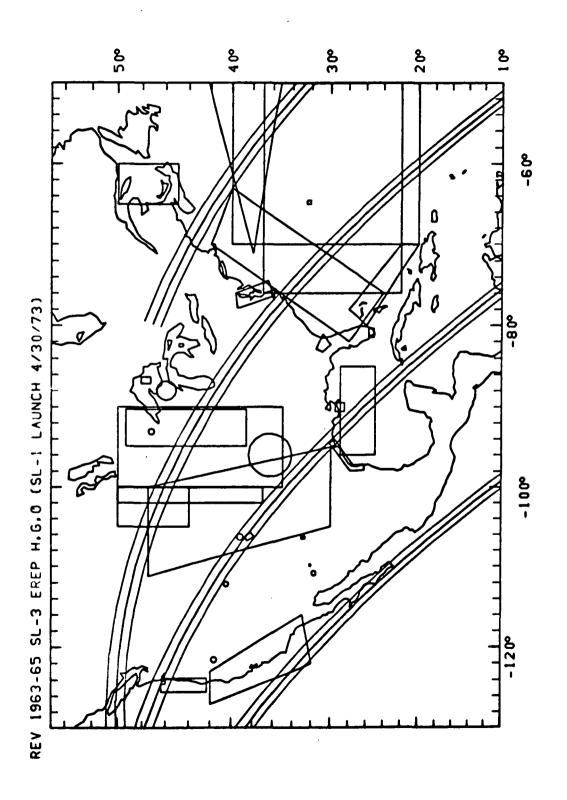


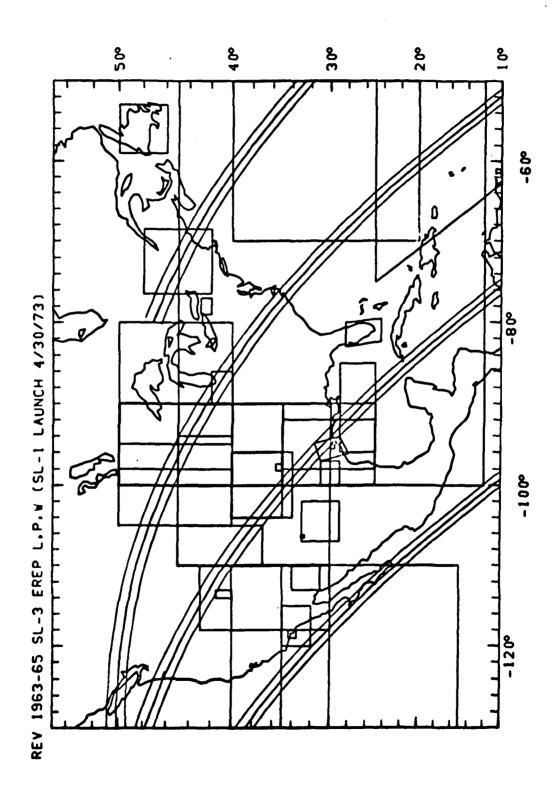


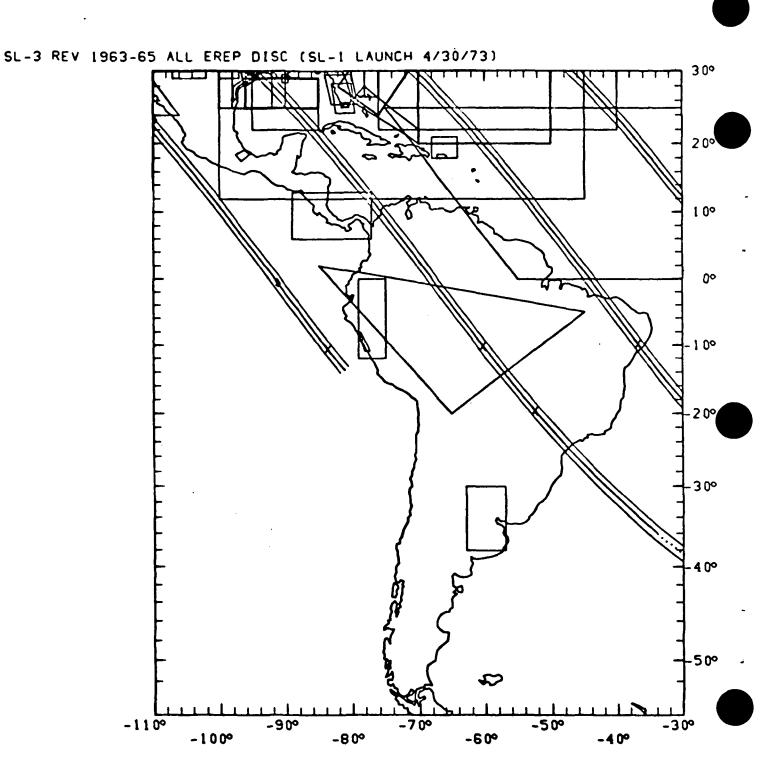


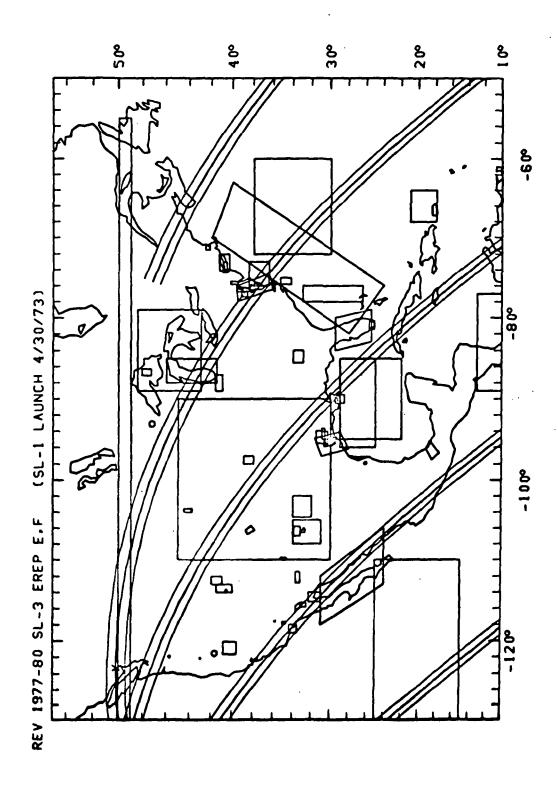


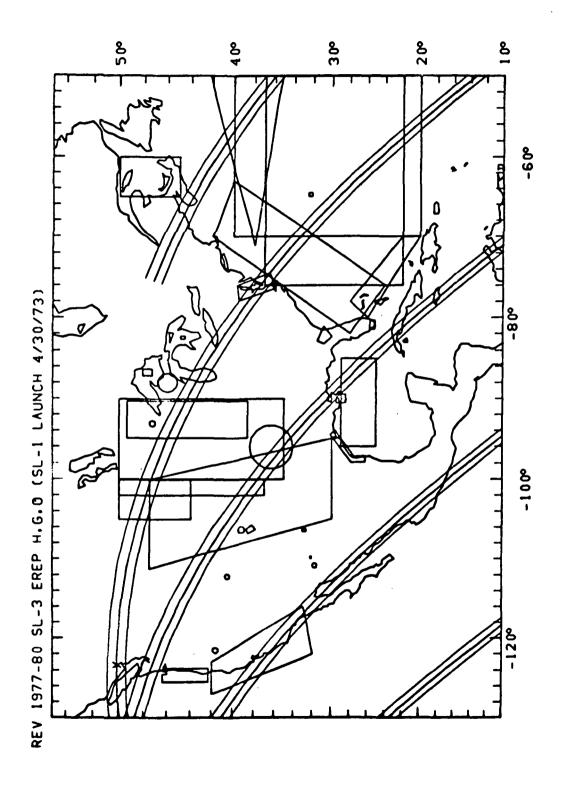


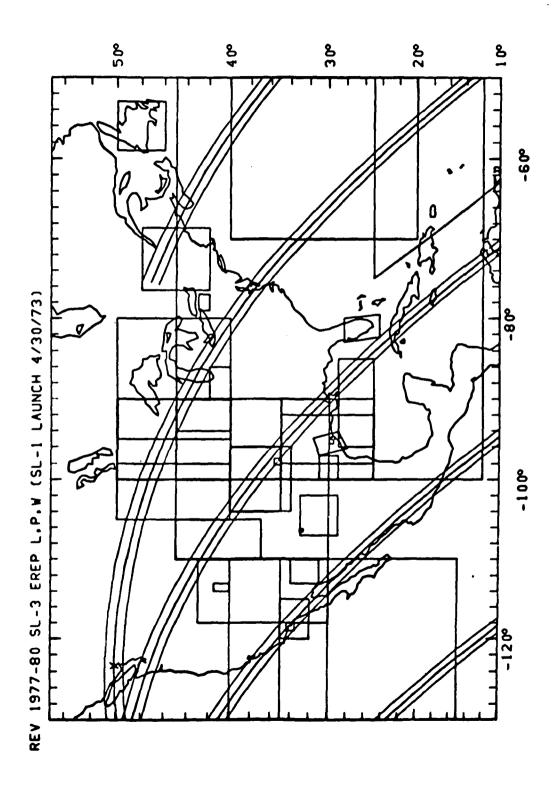


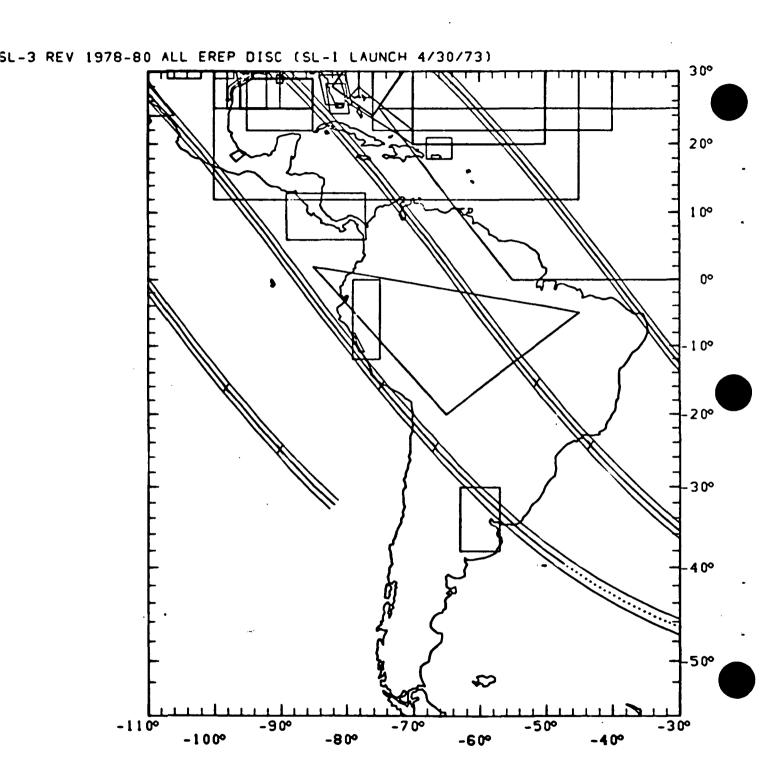


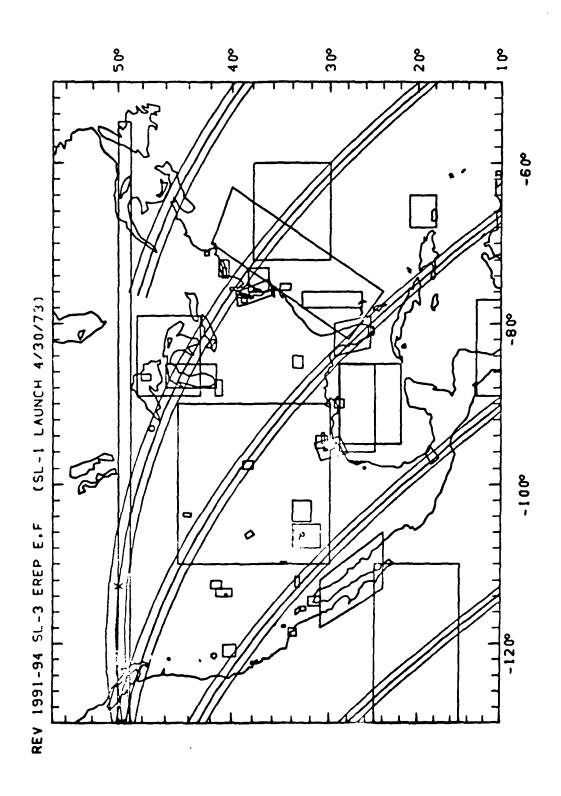


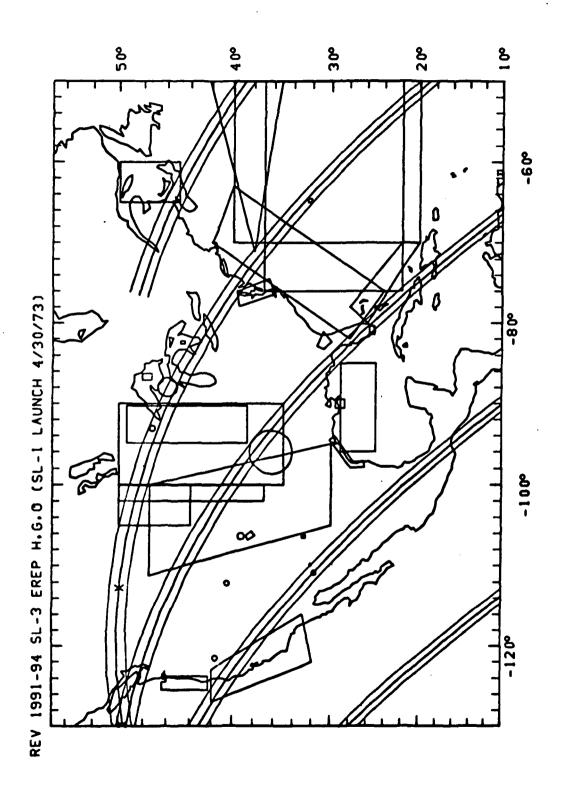


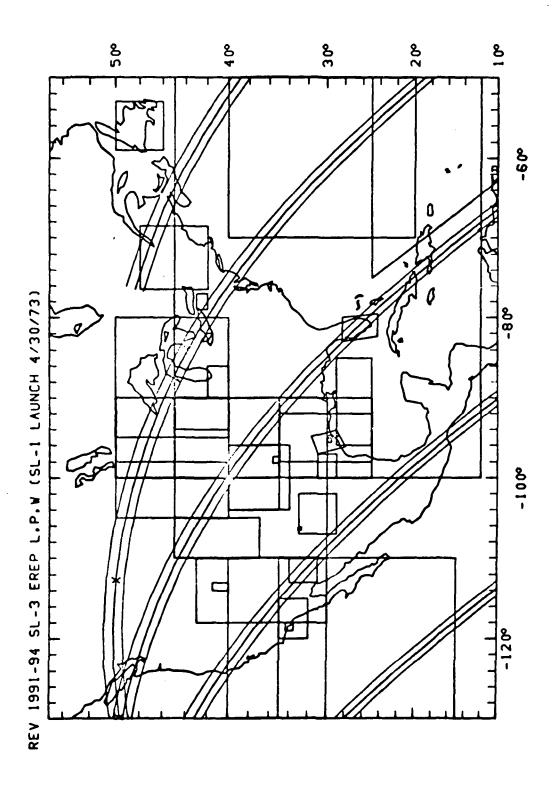


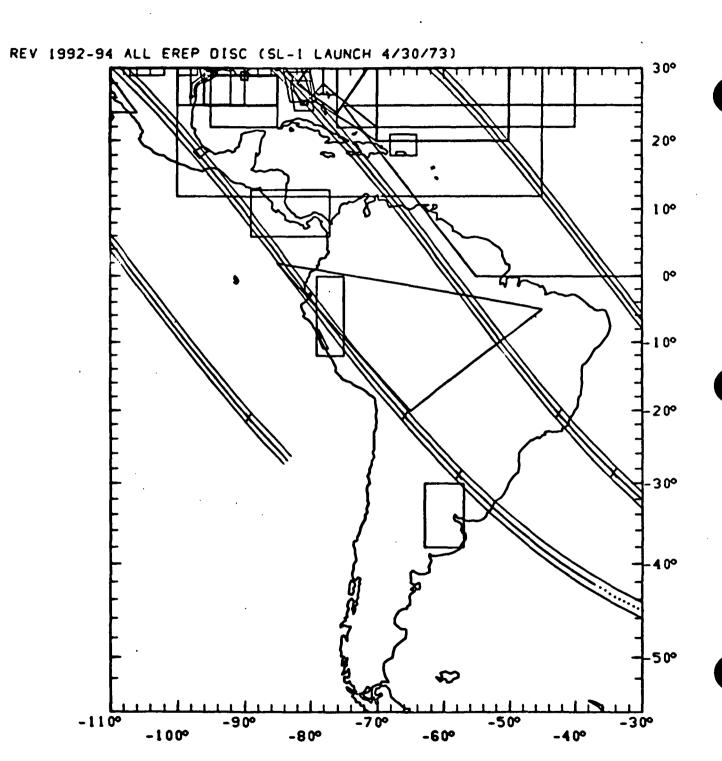


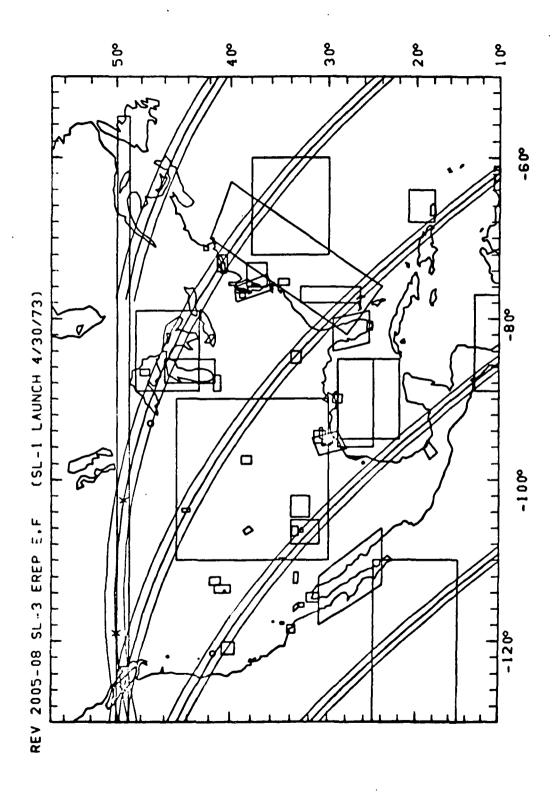


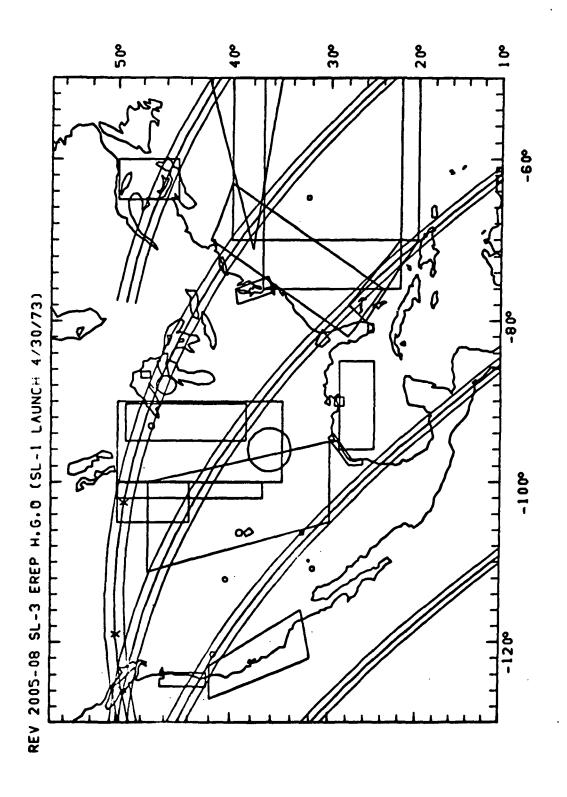


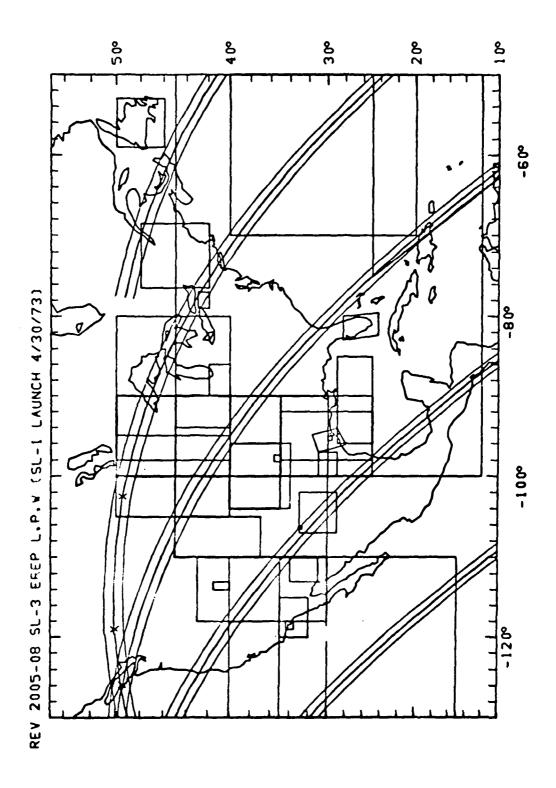


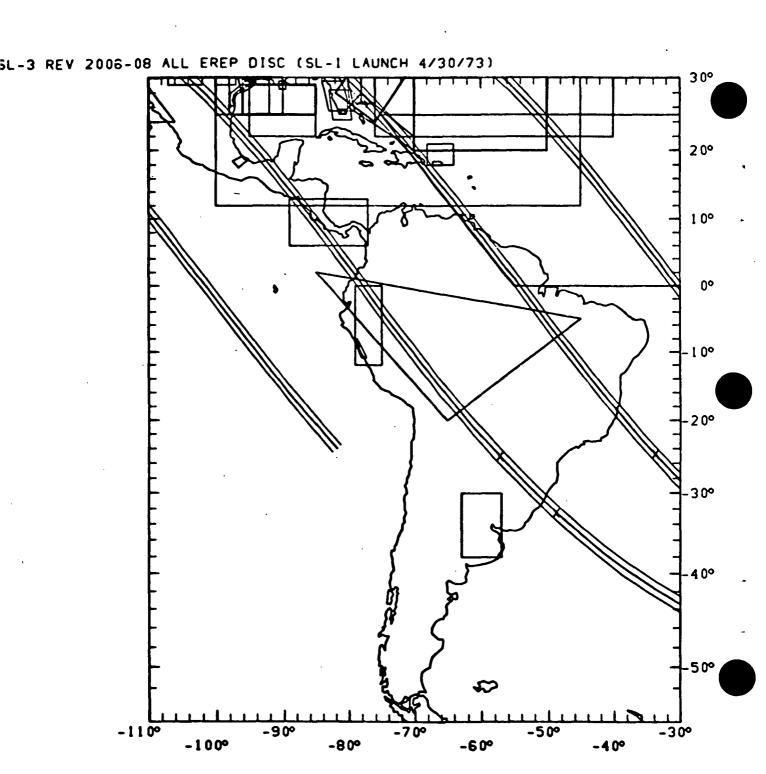


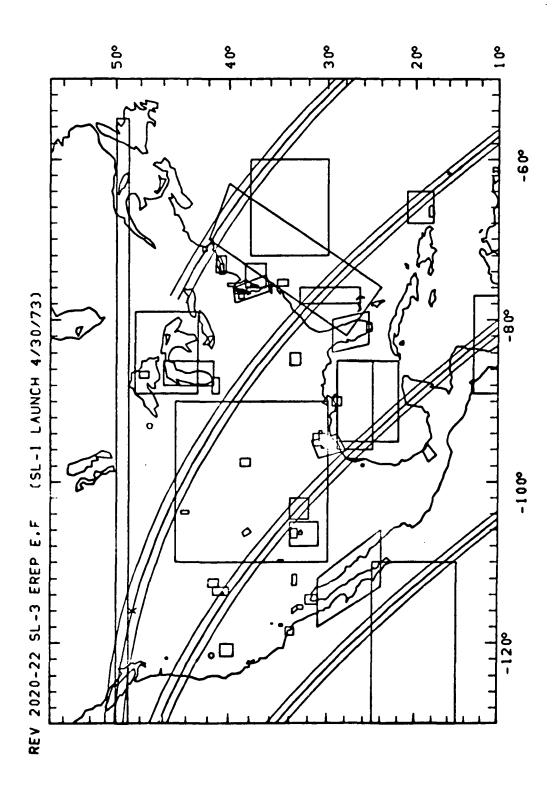


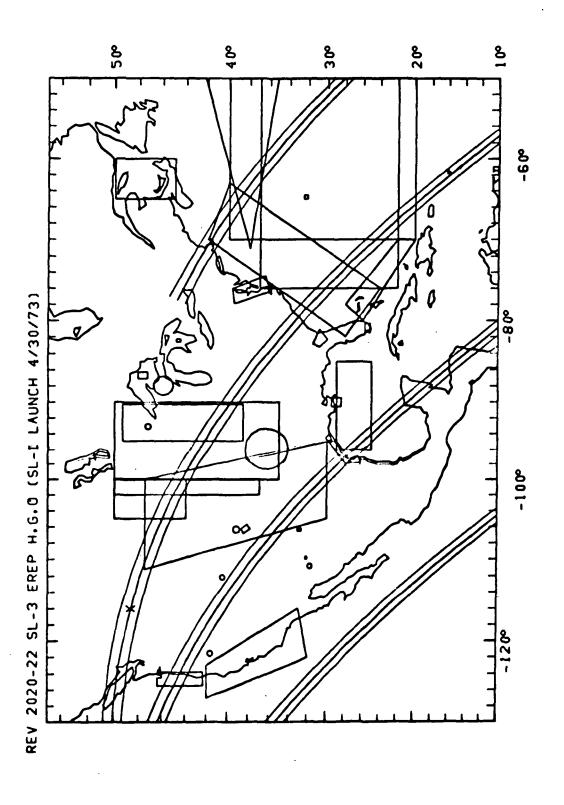


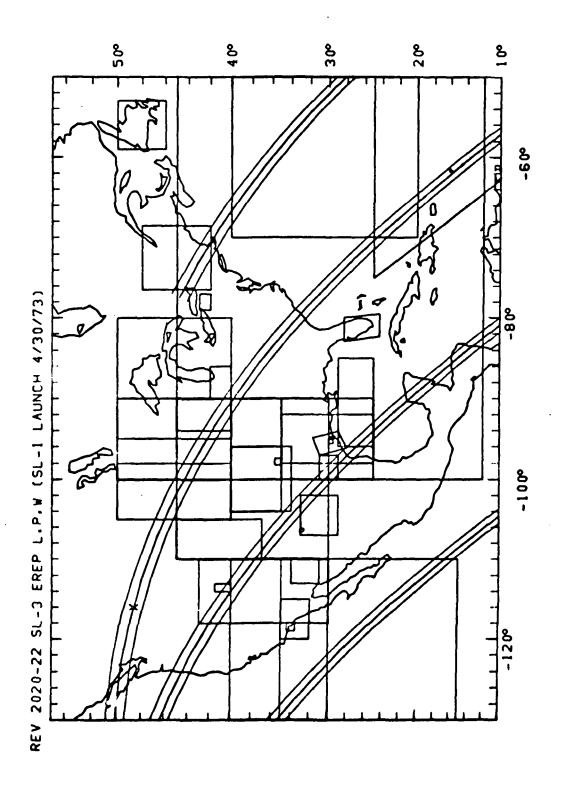




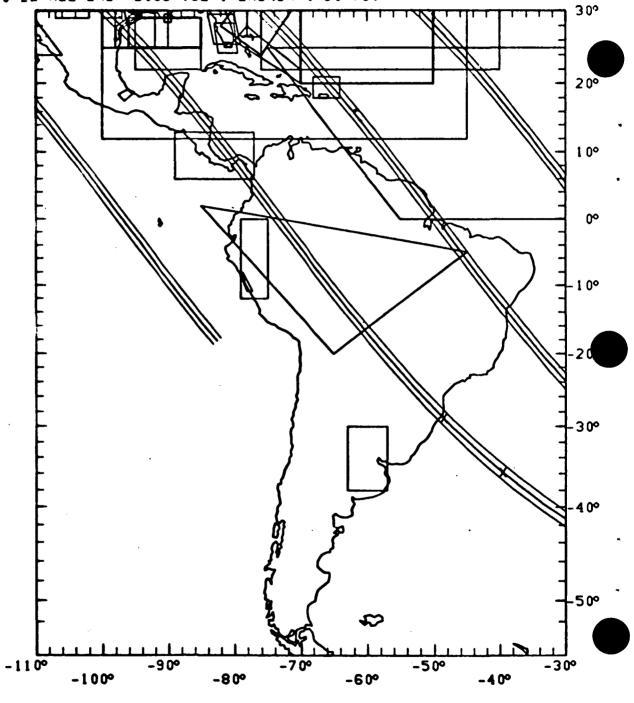


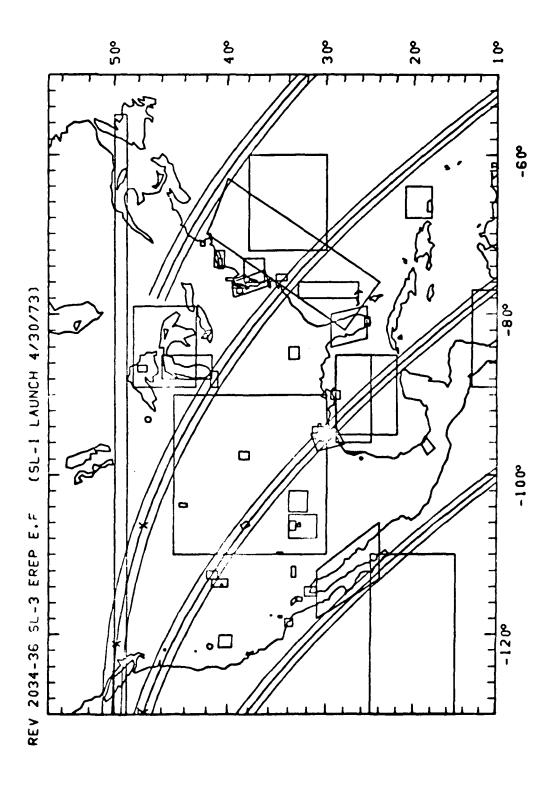


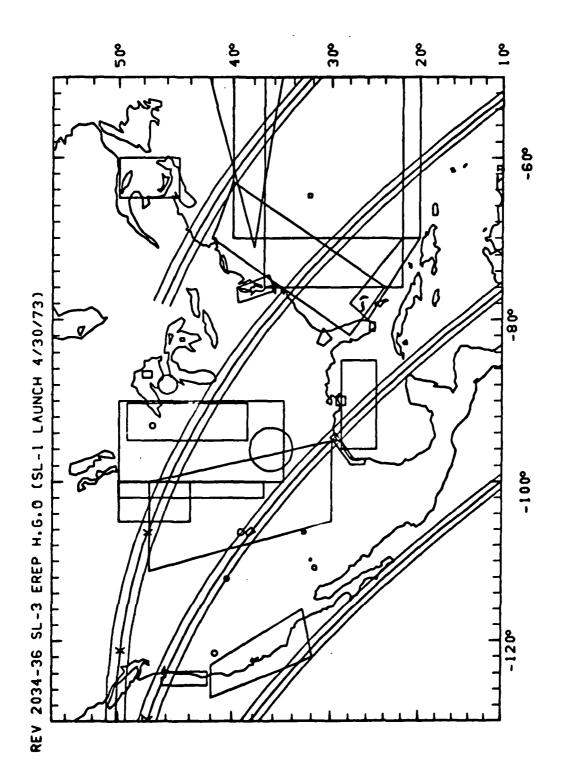


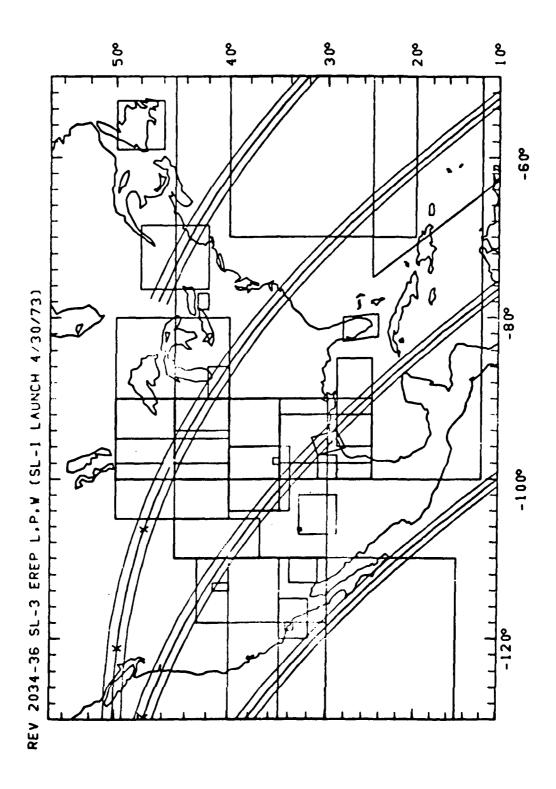


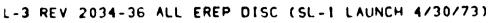


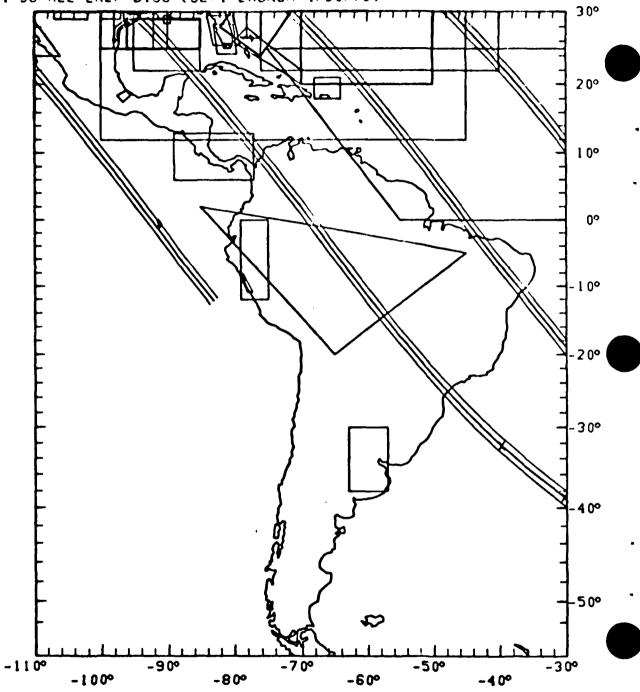


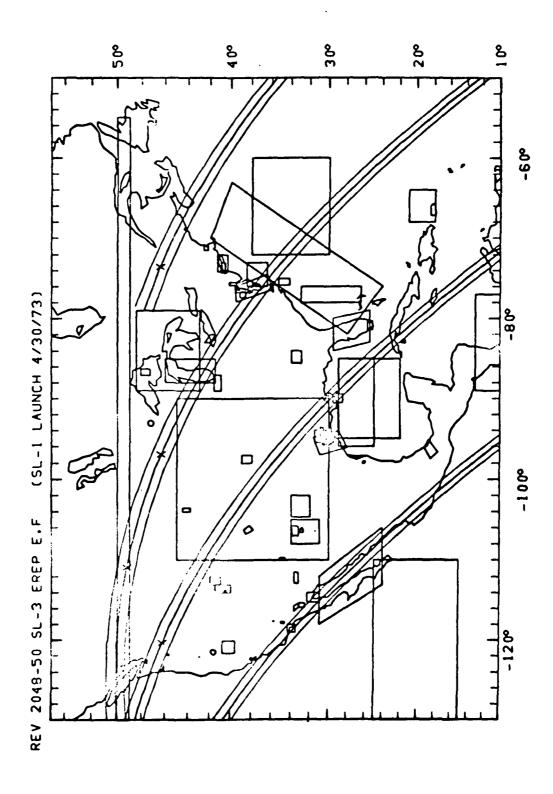


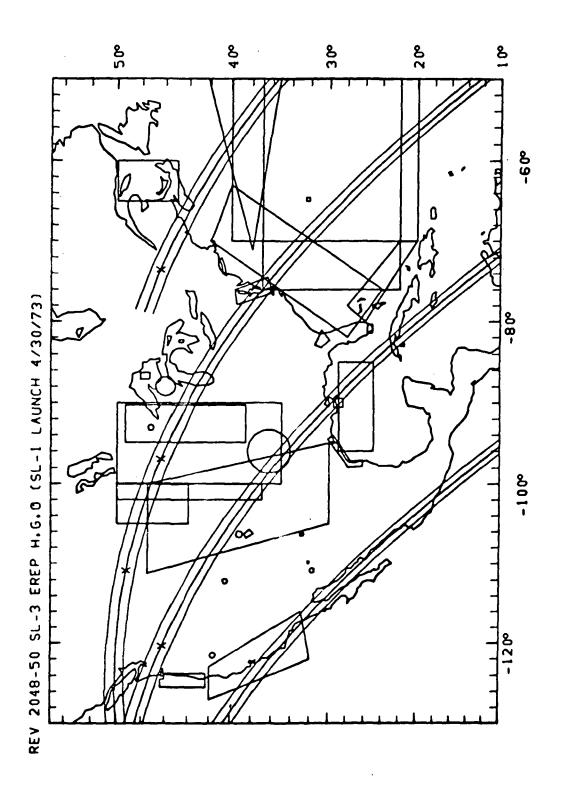


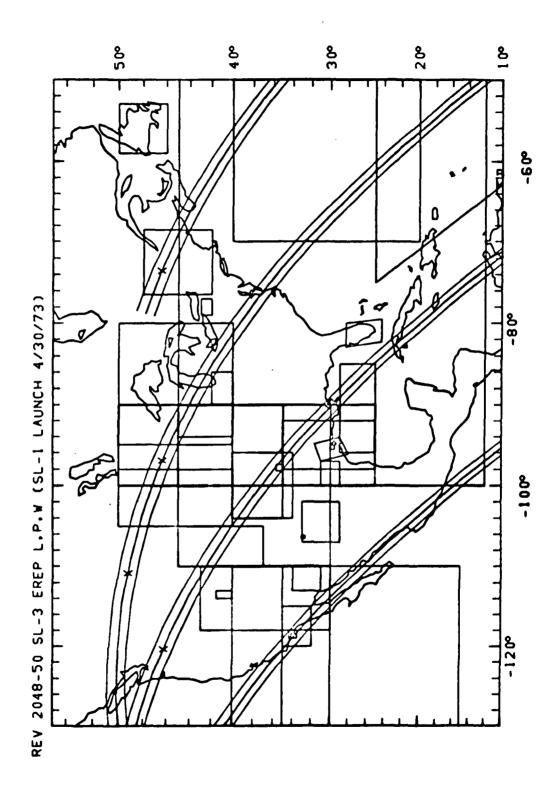


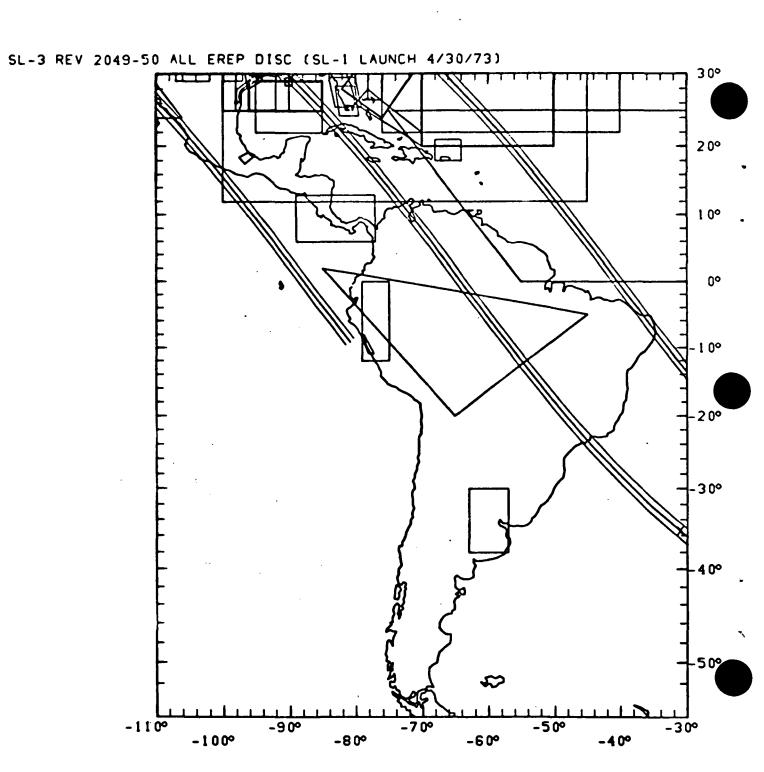


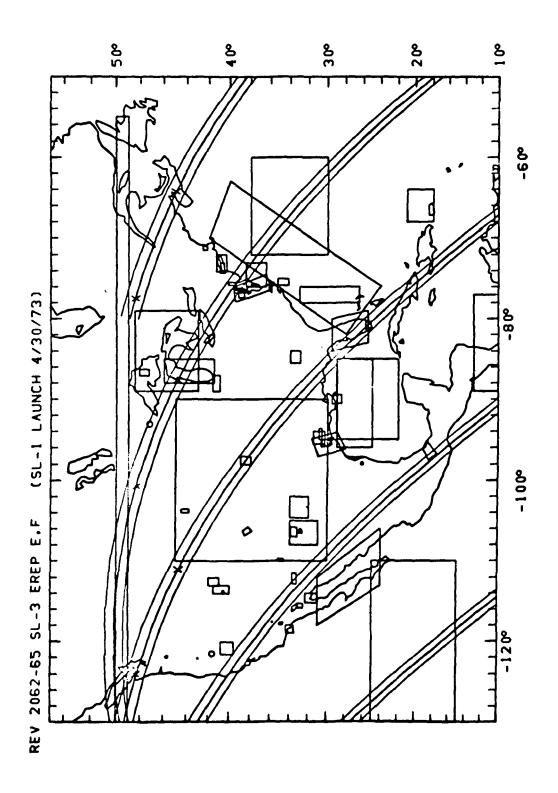


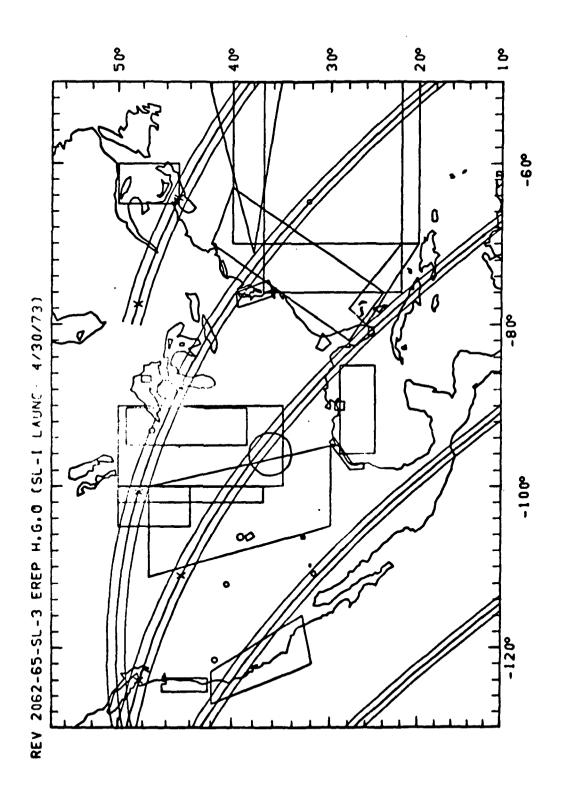


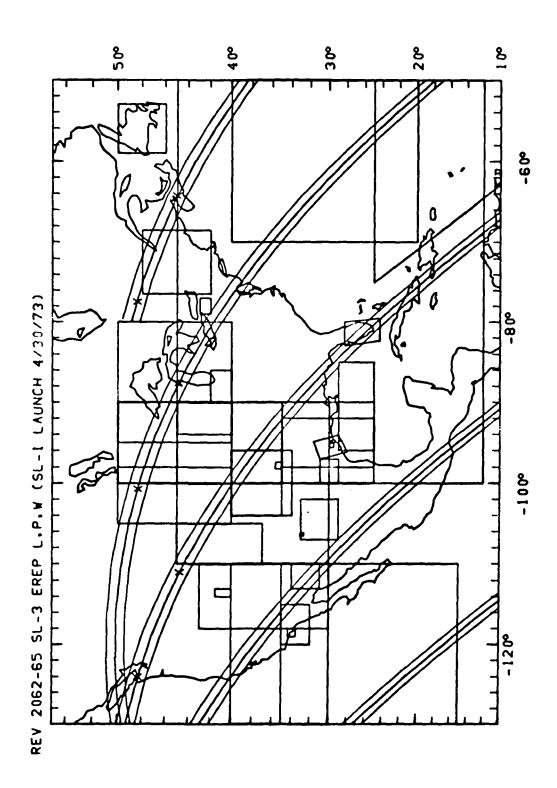




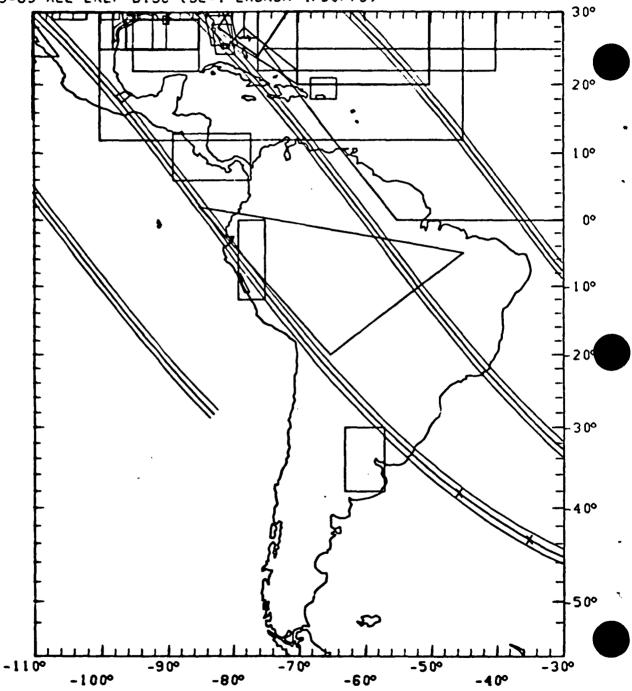


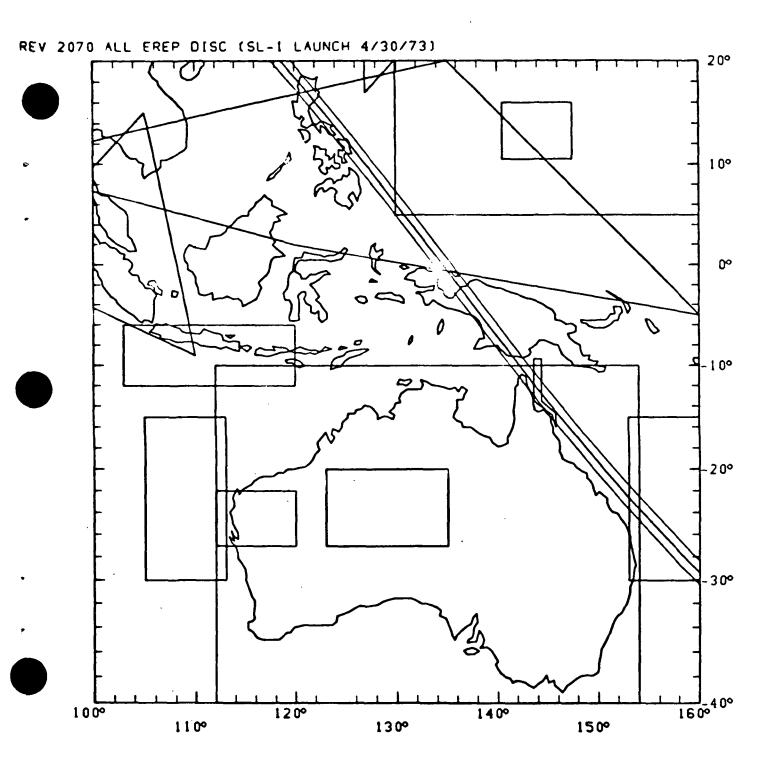


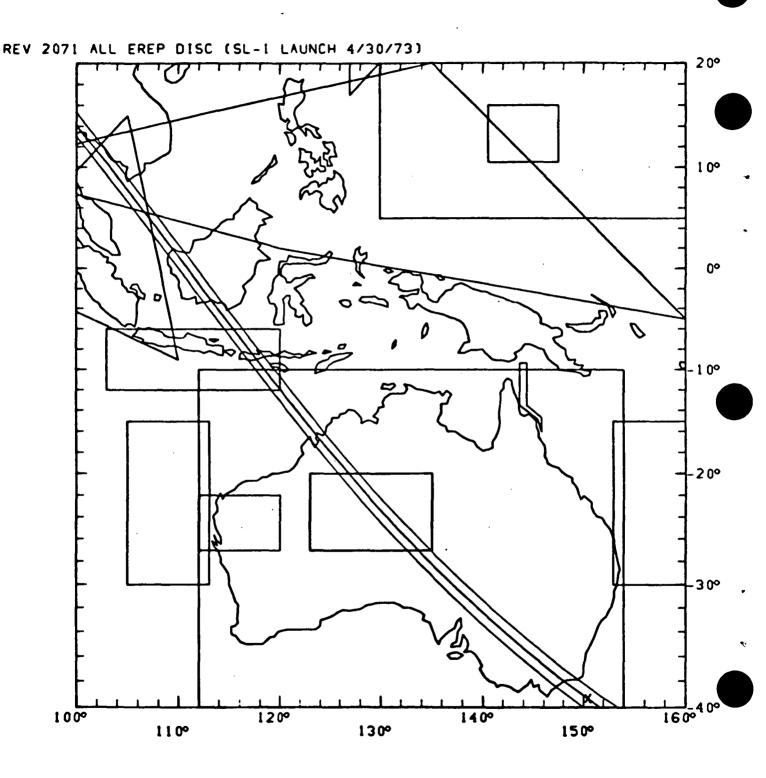


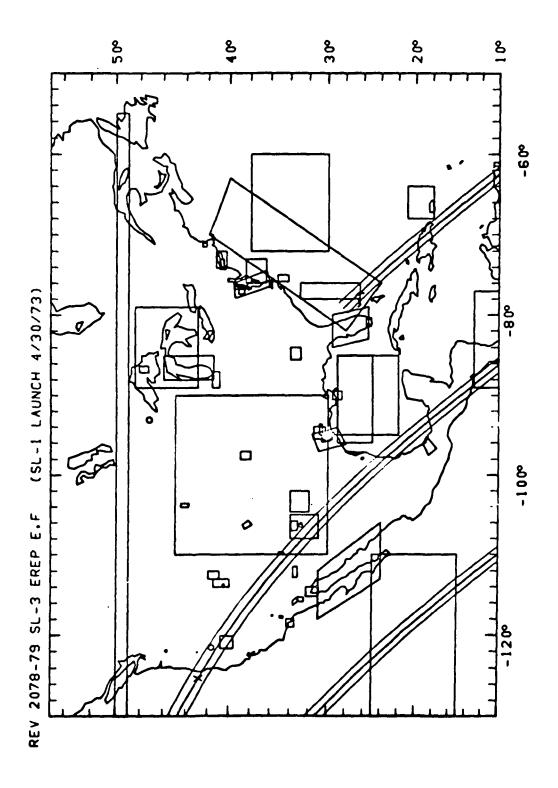


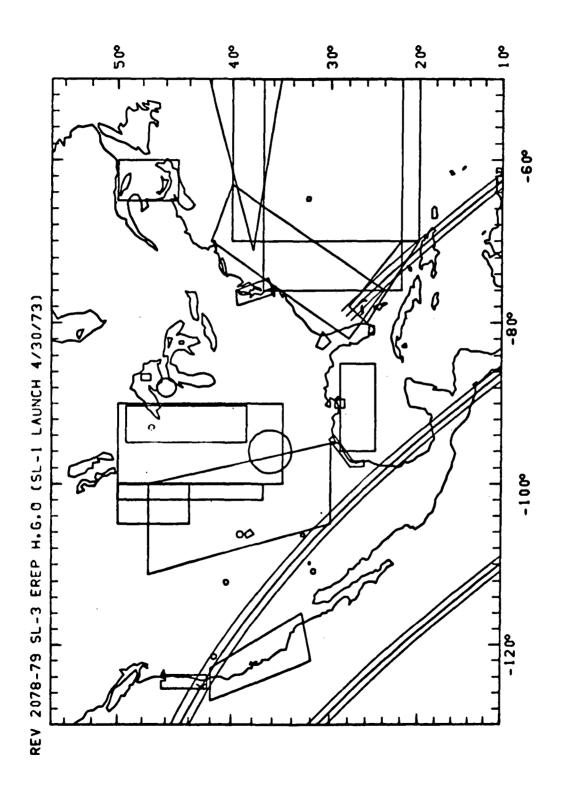


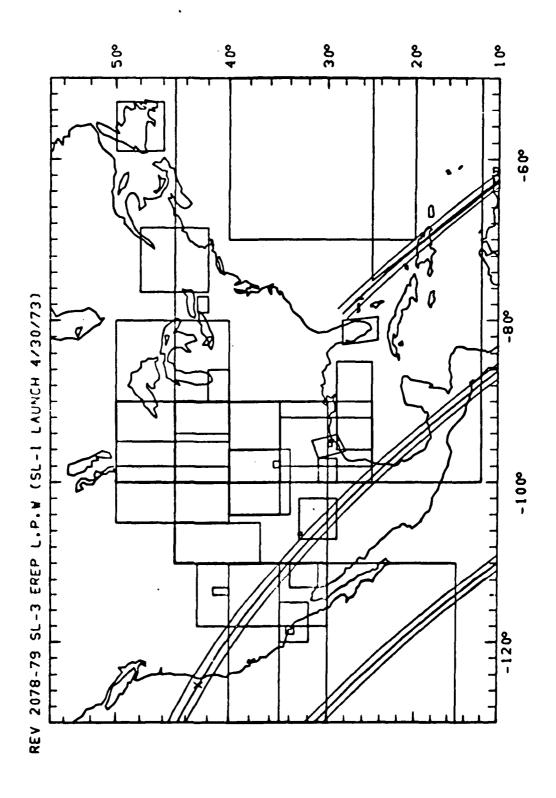


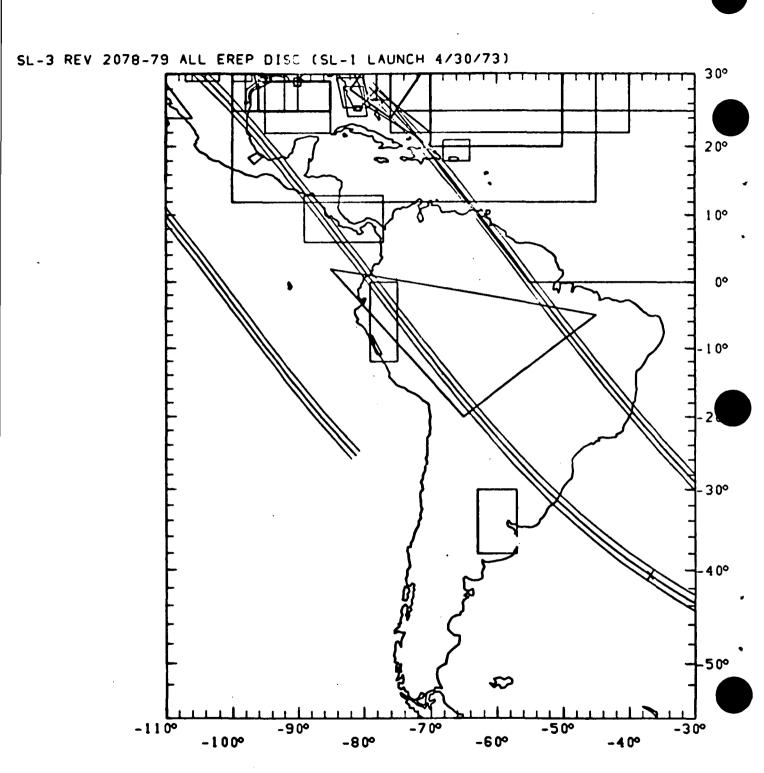


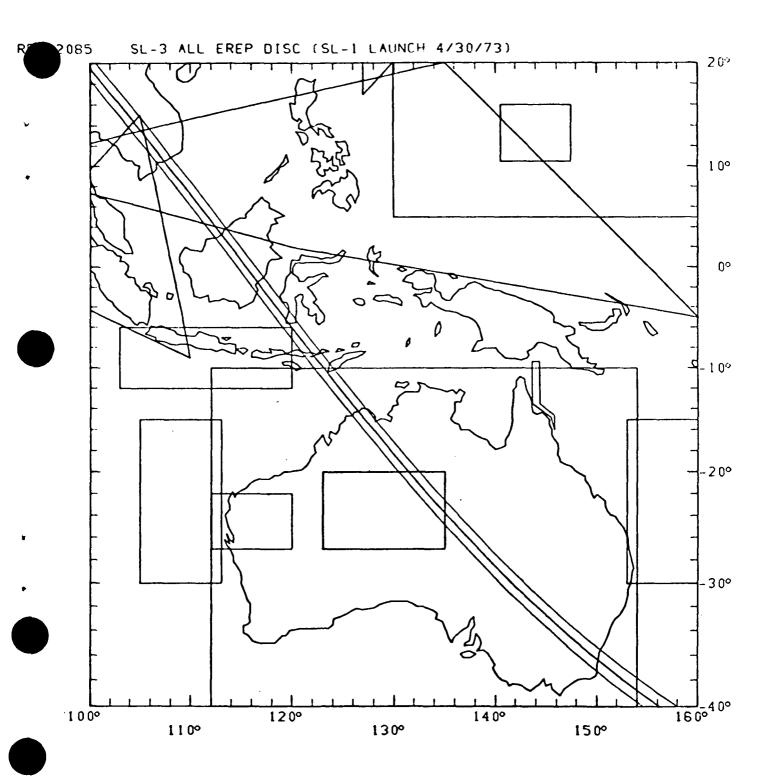












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